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**APPLICATION
OF COLOR VISION
TO
TWO-COLOR
MIXTURES
FINAL REPORT**

23 AUGUST 1963

CONTRACT # AF30(602)-2635
F-2022-1

PREPARED FOR

ROME AIR DEVELOPMENT CENTER
RESEARCH AND TECHNOLOGY DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
CANTIER AIR FORCE BASE
ROME, NEW YORK

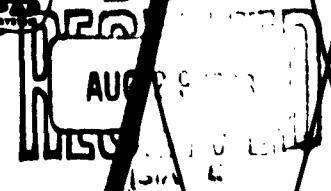
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APPLICATION OF COLOR VISION THEORY
TO TWO-COLOR MIXTURES

FINAL REPORT

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Contract No AF30(602)-2635

Prepared for

Rome Air Development Center
Research and Technology Division
Air Force Systems Command
United States Air Force
Griffiss Air Force Base
Rome, New York

23 August 1963

APPLIED RESEARCH LABORATORY
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ABSTRACT

Data was collected on two-color mixtures to evaluate the effects of photographic filters (i.e., densities of corresponding pairs on two slides) and projection filters on perceived hue and saturation

The first part of the program employed broad band filters. Three slides were combined factorially, yielding slide pairs. Each of these pairs was projected through nine filter combinations. Subjects judged the hue and saturation of nine stimulus chips. It was found that some but not all pairs of projection filters yielded a full range of color and further, that classical color mixture theory was adequate to explain the perceived colors if consideration was given to the induction of the complement of the background color.

The second part of the program employed narrow-band filters. Fifteen pairs of slides were combined factorially with twenty-seven pairs of projection filters and seven conditions of ambient illumination. As with the broad band filters, it was found that some but not all filter combinations produced a full range of color. However, classical color mixture theory was not adequate to explain all the perceived hues.

Finally, a portion of the data was used to evaluate the model of color perception proposed by Yilmaz (1962).

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Application of Color Vision Theory to Two-Color Mixtures

PUBLICATION REVIEW

This report has been reviewed and is approved.

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SECTION 1
INTRODUCTION

1.1 OBJECTIVES

1.1.1 Systematic and Quantitative Investigation of Two-Color Mixtures

A primary goal of this contract was the thorough investigation of some of the more important variables affecting two-color mixtures. In selecting the variables, consideration was given to the second goal of the contract, namely, the evaluation of the Yilmaz (1962) model for color perception. Thus, the variables selected were expected, on the basis of previous research, to affect two-color mixtures and to provide data which would allow an estimate of the validity of the Yilmaz model.

From an original set of six variables the following four were selected:

- a) Wavelength of maximum transmission of the filters through which the transparencies were photographed.
- b) Wavelength of maximum transmission of the filters through which the transparencies were projected.
- c) Ambient illumination.
- d) Transmission bandwidth of filters used in photography and projection.

To determine the effects of these variables, upon the perception of two color mixtures, eleven Munsell chips were selected as stimulus material. These eleven chips, however, included one white and one black chip which were used only as references in the photographic procedure. Subjects were required to respond to these nine chips in terms of Munsell hue and saturation, and these responses (converted to CIE coordinates) were then compared with the coordinates of:

- a) the actual Munsel chip photographed, and
- b) the colored squares as they were projected.

In this manner it was possible to examine the extent to which the original chip's* hue, and saturation were reproduced and the relationship between the physical stimulus on the screen and the hue and saturation perceived by the subject.

By these same procedures information was obtained which would allow an evaluation of the various parameters of the model of color perception proposed by Yilmaz (1962).

The two succeeding sections describe, in turn, past research on two-color mixtures and the Yilmaz model of color perception.

1.2 HISTORY OF TWO-COLOR MIXTURES

1.2.1 Early Work

The first recorded two-color mixture appears to be that of Louis Ducos du Hauron in 1895 (Wall, 1925). He describes the production of "a colored sensation as complete as the trichromatic images" which was obtained using only red and blue pigments (the yellow pigment which he had been using in his three-color separation work was eliminated). This phenomenon was restricted in the sense that it could be observed only under weak daylight or by yellow light such as that obtained from candles, whereas for three-color mixtures the optimum viewing condition was bright daylight.

This work of du Hauron was followed, after the turn of the century, by a patent granted to Fox, Hickey, and Kinemacolor (1914) for a two-color process in which pictures were taken through red and green filters and the red record was projected through a red filter while the green record was projected with no filter. Work on two-color systems seems to have died out with the development of Kodachrome

*The word "chip" as used in this report will refer to the Munsell chip actually photographed while the word "stimulus" will refer to the various projected spectra to which the subjects responded.

(Mannes and Godowsky, 1924). The work on two-color systems in the early part of the century is summarized in Wall (1925).

1.2.2 Recent Work

In 1959 Land published descriptions of extensive investigations of two-color mixtures (Land, 1959 a, b, and c) employing the following procedure (Land, 1959 a)...

"... two black and white photographic positive transparencies are made in a split-beam camera ... One is taken through a Wratten No. 24 filter, passing wavelengths longer than about 585m μ and one through a Wratten No. 58 filter, passing wavelengths shorter than about 585m μ . These two photographic records will be referred to as the 'long record' and the 'short record' respectively. The picture is exposed so that the gray scale appears to have the same densities on both records.

"The two records are then projected ... and superimposed exactly ... In front of each lens is a pair of polarizers mounted so that the intensity of the light in each beam can be varied separately. In projecting, the long record is projected ordinarily through a red filter (Wratten No. 24) and the short record through a neutral density filter of about 0.3 (when the polarizers are not being used). The half of the projector containing the long record will be referred to hereafter as the 'long projector,' and the other as the 'short projector.'"

Employing the procedure described above, a full range of color was obtained including yellow (blond hair), blue, red, blue-green, and flesh tones. It was also demonstrated that there is no appreciable time lapse in the appearance of "full-color," that these colors can be observed in white ambient illumination, and that the range of color perceived is independent of the visual angle subtended by the stimulus. It should be noted that all of these phenomena were demonstrated in a qualitative manner and it seems extremely unlikely that,

for example, the independence of color on visual angle would hold at extreme values. (Land, 1959 a experiments 1-7.)

By placing the red filter over the "short record" and no filter on the long record (experiment 8) Land (1959 a) demonstrates that the colors perceived are not dependent on the subjects expectations. With this procedure subjects report blue-green lips, green hair, and similar color reversals.

In experiment 10, Land (1959 a) varied the intensities of each record relative to the other and found "that the ratio of stimuli can be varied enormously - with some pairs of stimuli by ratios as high as 100 to 1 - without altering the color name given to each one of the objects."

Land, in experiments 12-14 (1959 a) also demonstrated that although changes in projection filters alter the backgrounds slightly, the stimuli remain constant with respect to color.

Land (1959 a, b and c) concluded from the above described demonstrations (plus others which seem less relevant to the present investigation) that color perception could not be described as a function of the wavelengths of the energies impinging upon the visual receptor mechanism and that a new coordinate system was required to describe color-vision with "natural images," as opposed to a stimulus spot in a uniform surround. This conclusion (that classical color theory was inadequate to explain the phenomena described above) has been examined in detail by Woolfson (1959), Judd (1960), and Walls (1960). These authors concluded that, if consideration is given to the phenomena of "color constancy," (the discounting of the color of the illuminant in judging the color of objects) and simultaneous and successive contrast, (the induction of the complement of a color in a neutral area adjacent to a chromatic area) the phenomena reported by Land (1959 a, b and c) can be largely explained within the framework of classical colorimetric theory. To illustrate this point, the following example is quoted from Walls in reference to two-color mixtures (Walls, 1960 p. 35):

"When a surround is mixed from two beams of light they may both be colored or, e.g., red and tungsten 'white,' and in either case the mixture will tend to be seen as white in consequence of general chromatic adaptation. But the red-light content acts as if it were alone, in causing lateral adaptation of the retinal area subtending the spot. Truly white light in the spot would now appear white-minus-red, i.e., blue-green. But, if the spot light itself is a little reddish, some of its direct redness can combine with the induced greenness and a little of the blueness to give a basis for neutrality, and the remaining direct redness and induced blueness will make the spot purple."

As a final example, consider the case of two colored spots (red and green) photographed with red and green filters and projected with a red filter (long record) and no filter (short record). The red spot is represented by a high transmission on the long record (red filter) and a low transmission on the short record (no filter) and thus is seen as red. The green spot, on the other hand, is represented by a low transmission on the long record (red) and a high transmission on the short record (no filter or "white" light) and thus is represented on the screen by "white" light. This "white" spot however is perceived as a blue-green due to simultaneous contrast produced by the surround which is a mixture of approximately equal amounts of red and white light, and hence is more red than the spot.

In evaluating the results of the present investigation, then, the predictions based on classical color theory will include those resulting from "color constancy" and contrast effects.

Land's demonstrations and papers (1959 a, b and c) stimulated a number of investigators to attempt to replicate the phenomenon and when successful replication was achieved to examine the effects of other unexplored variables on the range of colors perceived in two-color mixtures.

Berg and Forkner (1960) used both "natural scenes" and a display of square stimulus spots as subject material. They found that the perceived colors were those of the filter (in the single filter projections), its approximate complement, and shades adjacent to these two colors (which, however, were considerably less saturated). The colors observed were predictable from classical two-color mixture laws, if it was assumed that the complement of the filter hue had been induced. When the two records were projected, using two filters, both the number and saturation of the colors perceived were dependent on the wavelength separation of the projection filters.

Adaptation (the induction of the complement of the projection filter) was used by Hughes (1960) to predict the colors perceived when a "natural scene" was photographed through red and green filters. When this scene was then projected with green and red filters over the short and long projectors those colors predicted by classical theory (red, yellow, and green) were observed. When the long record was projected through a red filter and the short with "white" light, reds, yellows and desaturated blue-greens were seen. Similarly predictable colors were perceived with various other filters. Predictions were made on the basis of a shift in the neutral illumination point toward the filter color in accordance with color constancy. Complements of the projection filter color were then induced in areas darker than this shifted neutral point.

Bivens (1961) examined the relationship between the difference threshold for hue and the minimum separation of projection filters to produce "good" two-color mixtures (Hecht's data were used for the difference thresholds and Land's for the two-color mixtures). The data showed a close relationship between the two variables. For a good two-color effect the filter separation must be about ten times as great as the difference threshold in that region of the spectrum.

Comparisons among two-color projections, three-color projections, and actual stimulus material with respect to quality and fidelity

were made by Burckhardt and Strutt (1961). They found little difference between stimuli projected with red and green filters and those projected with a red filter and incandescent light ("white"). Both of these, however, were inferior to the projections of a three-color system with respect to both quality and accuracy of judged color.

Rushton (1961) found that Grassman's laws hold for three-color matches of two-color projections. Two-color projections were through a red filter (long record) and no filter (short record). A three-color match made to such a two-color mixture was equal to the sum of two separate three-color matches made to each of the components of the two-color mixture (i.e., red and "white"). This three-color match was found to hold, independent of any reported changes in the hue of the stimulus (i.e., changes due to contrast effects). The two-color system was found to leave more colors unrepresented than represented.

Interest in the anatomical locus of two-color mixtures effects has led to attempts to produce this phenomenon with presentation of the two components to the two eyes separately. Pastore (1960 a and b) found that in addition to two-color mixtures being producible with binocular stimulation, simultaneous contrast effects could also be produced with black and white drawing which were capable of being fused. When fusion occurred while a red filter was over one eye simultaneous contrast effects were reported. Geschwind and Segal (1960) found that a "full range of colors" was obtainable when the two records were presented to two different eyes simultaneously. The authors concluded that the "Land effect" must either take place, at least in some cases, at some level higher than the retina, or there must be some effect of stimulation of one retina, through higher centers, on the sensitivity of the other retina.

In addition to the studies reported above, consideration has been given to the implications of two-color mixtures for color television by Hirsch (1960); attempts (unsuccessful) to induce Fechner Colors in black and white photographs (Brown, 1960) and numerous

"popularized" discussions of the "Land effect" (Bello, 1959; Campbell, 1960). Such publications have not been discussed here either because they do not seem relevant or because the information presented would have been redundant.

1.3 THEORETICAL CONSIDERATIONS

It is well known that colors perceived by the human eye can be ordered in hue on a closed curve. The so-called color wheel or color triangle are special examples. In other words, there is a correspondence between the points on a closed curve and the various hues perceived by the human eye. Physicists order the visible spectrum simply in terms of wavelengths on a linear scale, but this ordering is not circularly closed. That wavelength ordering and color perception ordering are fundamentally different becomes apparent from the following observations: The mixing of a color with its so-called complement produces a color perceived to have no hue (black-gray-white). This is unexplainable from the point of view of a linear ordering of wavelength. Also, the color of a small area illuminated by a given wavelength may be seen to differ depending upon the colors of the surrounding objects. In other words the color of a light sample actually perceived is subjective and largely relative whereas a physical ordering is absolute. The eye does not function like a simple spectrum analyzer, but transforms the information contained in the light distribution of a scene into a different representation which we call color. It is therefore preferable to treat color as a non-physical phenomenon in its own right and proceed from experimental facts in which the colors actually perceived by the eye are taken as fundamental.

The purpose of this section is to provide a simple theory of color transformation emerging from such direct observations. This theory explains the main features of the recent color photographs of Edwin H. Land, (1959 a) as well as the classically known behavior of colors under various illuminants and various viewing conditions. The

theory is based on pertinent simple experiments and the results of previous observers. It is constructed around a simple geometrical model and its main features are embodied in a set of transformations similar or analogous to the Lorentz transformations of special relativity. It is a phenomenological theory.

Most of the background information used to build the theory is well known, although the interpretations given here are unique. The principle that object-colors remain invariant under various illuminations, and that for each illumination there exists a reference point (level of adaptation), is due mainly to Helson, (1938). Helson was also the first investigator to point out that it is impossible for the eye to accept a single-frequency (monochromatic) source as an illuminant for satisfactory object-color rendition. Our theory emphasizes the invariance of color interrelationships between a set of color samples in a field of view rather than the invariance of individual object colors independent of other objects. However, the approximate constancy of object color is also predicted by the theory.

The effects of neighboring colors on a given light sample were investigated by various workers. This so-called contrast enhancement usually is treated as a separate phenomenon. The theory illustrates the close connection between this and the transformation under change of illuminant (adaptation). In fact, colored shadow effects and color illusions also follow from the same transformation. From our point of view contrast enhancement is essentially a consequence of the transformations as are most other color phenomena.

The starting point for the development is a geometrical model, which, for the sake of simplicity and clarity, is introduced in an idealized (or approximate) form. Linear coordinate transformations (of the Lorentz type) are fundamental to the theory in the manner in which they are fundamental to the special theory of relativity. Contrast enhancement follows as a consequence of the transformations; it is manifested as a shift of the achromatic axis to a point

representing the average of the values of the various light samples reaching the eye. A kind of relativity in color vision -- the final factor of the idealized model is encompassed in a shift of the origin necessary to preserve invariance of color relationships under a change of illuminant.* This idealized model can then be applied to describe Land's two-color projections. Finally, a more realistic model based on experimental data which starts with the C.I.E. tristimulus functions and which refines some of the idealizations assumed in the previous model has been introduced.

For the sake of convenience we have adopted a Munsell-like coordinate system. In this system the color matching experiments may be described in terms of the three variables ϕ , ρ , and γ of a cylindrical coordinate system (Figure 1). The three psychological attributes of object-color perception are then assumed to have a correlation with these variables as

$$\phi \rightarrow \text{Hue}$$

$$\sigma = \rho/\gamma$$

$$\gamma \rightarrow \text{Lightness}$$

$$\Sigma \rightarrow \sigma_{\max} = \text{Maximum Saturation}$$

Any vector $\vec{OF}$ (Figure 1) in our color space represents a particular color. The origin O corresponds to an object from which no light comes to the observer, i.e., to black. The γ -axis represents all shades of gray from black to white. Since the lightness of any light sample is positive definite, $\vec{OF}$ always has a positive γ -component. Furthermore, for each hue there is a maximum attainable saturation, usually identified as spectrum saturation. It follows

* This shift is with coordinates ξ , η , ζ such as to preserve the length of the vector representing the object in the transformation from old to new coordinate system, since the vector (magnitude and direction) describes the objects color.

that each vector, $\vec{OF}$, be inside a cone of maximum saturation, $\Sigma = \sigma_{\max}$, and according to its orientation relative to the γ -axis it describes the hue and saturation of a particular color.

Natural illuminants are neither of single frequency, nor even highly selective. Since the eye has evolved under natural conditions, the illuminants of greatest interest are those of only moderately selective spectral distribution. Such a source may have more or less preponderance of energy in a given wavelength region, and be called bluish, yellowish, reddish, and so on, but will never approach maximum purity. That a highly-selective or monochromatic source yields unacceptable object-color perception was pointed out by Helson (1938).

For the sake of simplicity an idealized coordinate system is used in initial interpretation. Let the angle $\phi(\lambda)$ represent the hue variable for a given illuminant. We can define a three dimensional space by the orthonormal functions

$$\bar{\alpha} = \frac{1}{\sqrt{\pi}} \sin \phi \quad \bar{\beta} = \frac{1}{\sqrt{\pi}} \cos \phi \quad \bar{\gamma} = \frac{1}{\sqrt{2\pi}} \quad (1)$$

In this space a spectral function $F(\phi)$ (the intensity versus wavelength distribution of an object) may be represented as a vector

$$F(\phi) = \alpha \bar{\alpha} + \beta \bar{\beta} + \gamma \bar{\gamma},$$

$$\alpha = \int_0^{2\pi} F(\phi) \bar{\alpha} d\phi, \quad \beta = \int_0^{2\pi} F(\phi) \bar{\beta} d\phi, \quad \gamma = \int_0^{2\pi} F(\phi) \bar{\gamma} d\phi \quad (2)$$

where α , β and γ correspond roughly to Red-Green, Blue-Yellow and Black-White values of an opponent-colors system such as the one proposed by Herring. Thus, in this space the color, F , corresponding to a patch of spectral radiance may be represented as a vector

$F(\phi)$ evaluated as a function of the hue angle on which the wavelength is mapped.*

Since F is positive definite (radiant flux) the space spanned by α , β , γ may be described as in Figure 1 where any vector F has a positive γ -component and lies away inside a limiting cone given by

$$\alpha^2 + \beta^2 = \Sigma^2 \gamma^2 \quad (3)$$

Also

$$\sigma = \frac{1}{\gamma} \sqrt{\alpha^2 + \beta^2}, \quad (4)$$

which for a spectral color reaches a maximum Σ . Thus the cone defined by (3) describes the limiting case of highest saturations.

The plane $\gamma = 1$ intersects the cone at a circle (Figure 1). This circle may be taken as a chromaticity diagram or color circle in this idealized system.

The coordinate system and color specifications described above work for a given illuminant. If the illuminant changes, we know that the color identifications of a given light sample, F , change. We may interpret this as a transformation of the coordinates α , β and γ into the new coordinates α' , β' , and γ' . It follows that the functions $\bar{\alpha}$, $\bar{\beta}$, and $\bar{\gamma}$ must also change so that the relationship (5) holds

$$F(\phi) = \alpha' \bar{\alpha}' + \beta' \bar{\beta}' + \gamma' \bar{\gamma}' \quad (5)$$

*Note that $F(\phi) = \alpha \bar{\alpha} + \beta \bar{\beta} + \gamma \bar{\gamma}$ is the lowest three terms of Fourier expansion. A given function, $F(\phi)$ will in general contain higher Fourier terms but we are restricting ourselves only to the first three terms as the color space of normal human vision is three dimensional. If some exceptional human beings sense some higher terms, the color space of these individuals would be said to have a higher dimensionality.

The transformation formulae which are at the crux of this theory may be summarized simply as follows:

In the α - β or color plane, Figure 2, the transformation appears as a shift of origin from I to I'. In three dimensions (color plus lightness) it is a rotation, linear distortion, and translation (point 0 is translated to 0', in Figure 3). In fact, if α and β are identified with the spatial dimensions, x and y , for example; and γ identified with time; Σ with c , the velocity of light; and σ with v , relative velocity, where $v < c$; then the transformation is analogous to the Lorentz transformations of special relativity plus a translation; i.e., the relativistic or Fitzgerald-Lorentz contraction

$\sqrt{1 - v^2/c^2}$ becomes

$$\sqrt{1 - \frac{\sigma^2}{\Sigma^2}} \quad (6)$$

(Σ the maximum saturation, may differ in different hue directions, for example, at high intensities, the so-called Bezold-Brucke phenomena).

The form of these transformations allows us to regard color as a relative phenomenon. Invariance of color relationships under a change of illuminant then expresses a kind of relativity in color vision. To each illuminant there corresponds a coordinate system, and the equivalence of these systems due to the existence of certain transformations indicates that any illuminant is just as good as any other.

If small areas of light have different values of coordinates α_1 , β_1 and γ_1 in a given coordinate system, then, in a room illuminated with the same wavelength covering large area, they will each be described by the appropriate transformation with respect to a mean coordinate system which is obtained by averaging the illumination over the room.

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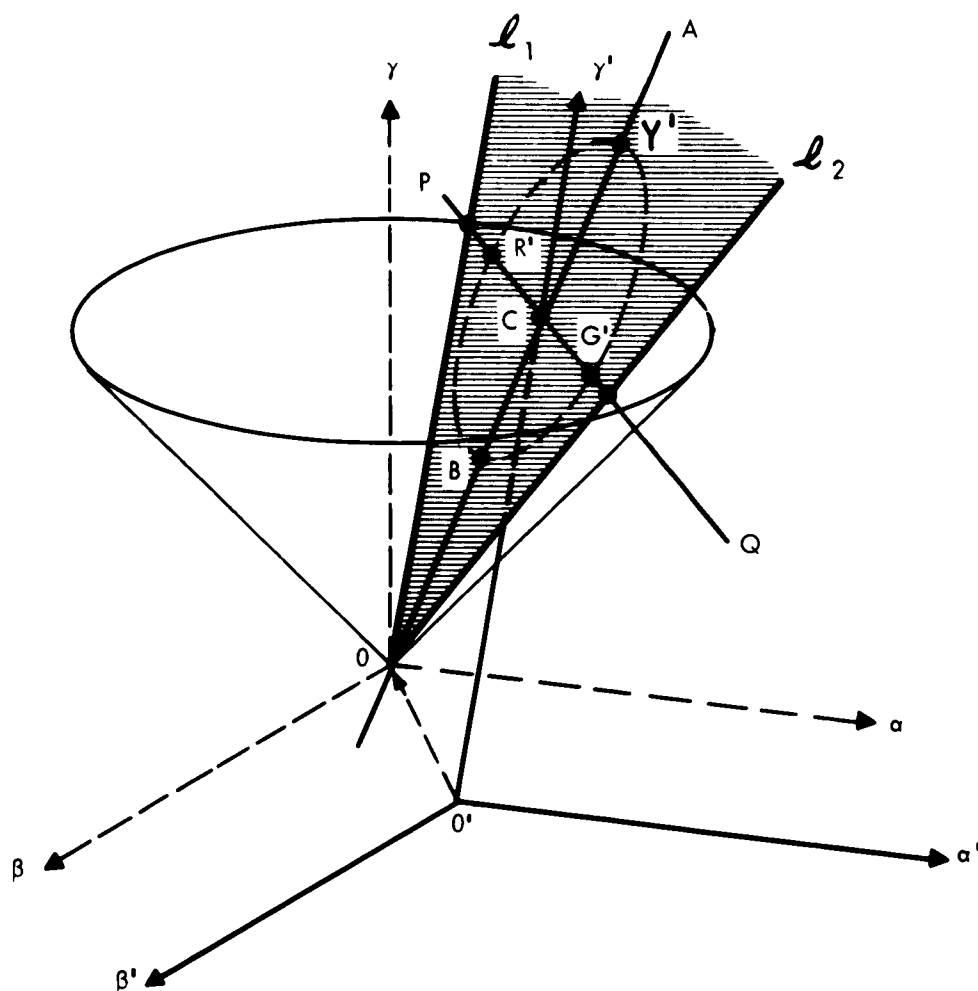


Figure 3. All Hues May be Generated by a Two-Color Projection. But Then If the Hue and Saturation of a Color are Given, Its Lightness Cannot be Arbitrary

A simple special case of this is the projection of a screen not covering the whole visual field. In that case the rest of the room is dark and the summation is extended to the area of the projected scene. This special case has an interesting application in connection with the recent two-color projections of Edwin H. Land (1959 a). Furthermore, the shift of the origin is also necessary to explain certain of the two-color effects.

Let two-color separation positives of a natural scene, one taken through a red filter, the other through yellow-green, be projected with their respective filters in exact registration. On the screen the colors of the original scene are observed in their proper places. The colors of the objects depicted on the screen are perceived generally in correct hue and lightness order, but the saturations are distorted in a characteristic way. Let the saturations corresponding to our filters be σ_1 and σ_2 . In terms of the coordinate α , β and γ they would be described as the straight lines ℓ_1 and ℓ_2 (Figure 3). Therefore all possible light samples producible this way fall on the shaded plane area $\ell_1 O \ell_2$. Judged from this original coordinate system these light samples would appear as the various mixtures of red and yellow-green. But the eye does not function that way; the origin O is shifted to O' and the achromatic axis $O\gamma$ is tilted to $O'\gamma'$. O' is determined by averaging over the field of view. The net result is that from the new reference system light samples spanning the shaded area will now appear to have all hues. However, all possible colors are not generated since very bright blues and dark oranges will be missing.* This is because the equation of the plane may be written

$$A\alpha' + B\beta' + C\gamma' + D = 0 \quad (7)$$

so that if the hue and the saturation of a sample on this plane are given, its brightness cannot be arbitrary.

* The ideal model predicts a grey of one particular lightness, but does not predict white.

The form of Equation (7) is invariant under the transformations. In other words if new transformations are induced by turning on the lights of the room or by providing contrast and surround with the help of other colored areas and scenes, the appearance of a given image will remain practically the same. This is because along with the equation of the plane, the mutual interrelationships of its points will also remain invariant in form so that the color classifications of the objects within the image will be preserved. This leads to an important conclusion first expressed by Land that "different color worlds can coexist side by side or one within another."

The explanation of the range of colors producible by various pairs of wavelengths (Land's color map of the eye) follows from similar considerations. For example if λ_1 and λ_2 are parallel or if they are in the same plane with 0° the range of colors will be restricted (these are the cases of parallel and anti-parallel hues on a chromaticity diagram). Also if we always use the same pair of separation positives and vary only the wavelengths, we see that there will be a reversal of colors around the wavelength corresponding to blue, since this is where shorter wavelengths start getting a reddish hue which originally belonged to very large wavelengths. Comparison of these and various other consequences of the theory shows a satisfying overall agreement with the experimental results of Land.

In concluding this section we may add that the choice of orangish-red and yellowish-green as the pair of filters is better than other because the resulting colors are then brighter in yellows and darker in blues. This produces the well known phenomena that the best yellows are bright and the "best" blues are dark. The color quality of Land projections can also be improved by increasing the contrast and by adding to the screen a uniform bluish light (not necessarily projected). This later operation accentuates the effects of the transformation although a uniform light does not carry any new information from the original scene that was photographed.

In constructing a more realistic model we start from the C.I.E. tristimulus functions $\bar{x}$, $\bar{y}$, $\bar{z}$, and developed an expansion in other orthogonal functions.

Before we conclude, we must emphasize that the model of Figure 3 holds only for small and moderate intensities.

1.4 GENERAL PLAN OF THE STUDY

The present research was designed to fulfill three primary objectives:

- 1) To collect data in a systematic way on two-color mixtures.
- 2) To collect the data in 1) in such a form as to enable a precise and quantitative evaluation of the conditions under which varying numbers of hues and saturations would be perceived and to determine the fidelity of these colors (the extent of which they agreed with the subject matter photographed).
- 3) To utilize this data in the evaluation of the model of color perception proposed by Yilmaz (1962).

The research is divided into two sections, the first dealing with data obtained with broadband filters, the second dealing with data obtained with narrowband filters.

The broadband data was collected using three slides photographed through three different filters (red, green, and blue) and combined to yield three different pairs of slides. These were projected through nine combinations of the three filters used in photography plus the condition of no filter. In the cases where two filters were used the long record was always projected through the longer of the two filters. Three modes of response were utilized:

- 1) Absolute judgments of hue and saturations;
- 2) A matching procedure in which the subjects matched the stimulus seen with the left eye to one of a number of Munsell chips presented simultaneously, under Illuminant C, to the other eye;

- 3) A procedure like 2) above except that the Munsell chips were presented individually.

The narrowband data was obtained using six different slides (photographed through six different filters) combined to yield fifteen pairs. Each of these pairs was projected through twenty-seven combinations of the filters used for photography plus the condition of no filter over one of the records. Wavelength relationships were prescribed in the same manner as with the broad band filters. These conditions were replicated under the following conditions of incandescent illumination. (For C.I.E. coordinates see Appendix A):

- | | |
|---------------------------|----------------------------|
| 1. Incandescent ("White") | 4. Green, high saturation |
| 2. Red, high saturation | 5. Green, low saturation |
| 3. Red, low saturation | 6. Yellow, high saturation |
| | 7. Yellow, low saturation |

SECTION 2

METHOD

2.1 BROAD BAND

2.1.1 Apparatus

Three black and white slides (35 mm) were prepared using eleven Munsell color chips as subject matter. Each slide was photographed through a different colored filter (red, green, and blue). Table 1 describes the set of chips.

Table 1. Definition of Chips Used as Stimuli in Terms of Munsell Notation, C.I.E. Coordinates and Wavelength.

<u>Munsell</u>	<u>x</u>	<u>y</u>	<u>Dominant Wavelength</u>
5 BG 5/8	.210	.329	492 mμ
5 B 5/6	.222	.272	486
10 PB 5/8	.257	.221	455
5 P 5/8	.289	.229	561 C
5 R 5/8	.441	.323	612
5 YR 5/8	.483	.395	587
5 Y 8/8	.416	.438	575
10 GY 5/8	.310	.465	551
10 G 5/8	.229	.372	499
White			
Black			

The chips were arranged in two rows of four chips; and one row or three. Three slides were prepared, one each through the following three filters:

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1) Wratten	47 B	(452.7m μ)	Blue
2) Wratten	11	(552.5m μ)	Green
3) Wratten	29	(632.7m μ)	Red

Densities of the stimuli and background on each slide are given in Table 2.

Table 2. Stimuli and Background Densities.

<u>Chip</u>	<u>No. 1 (452.7mμ)</u>	<u>No. 2 (552.5mμ)</u>	<u>No. 3 (632.7mμ)</u>
5 BG	1.42	1.12	1.71
5 B	1.25	1.12	1.53
10 PB	1.10	1.17	1.20
5 P	1.17	1.18	1.12
5 R	1.64	1.18	1.02
5 YR	2.03	1.16	1.06
5 Y	1.61	0.66	0.77
10 GY	1.96	1.13	1.66
10 G	1.57	1.11	1.72
White	0.82	0.57	0.69
Black	2.15	1.97	2.06
Background	0.79	0.58	0.69

Two Kodak Signet 500 projectors were mounted on a 3 x 2 foot piece of plywood to insure steady images on the screen (Da-Lite). The projectors were equipped with irises and filter holders. Sylvania 750 watt DDB lamps were used as light sources (Tristimulus values for the projection lamp and the three filters are presented in Appendix A). A 36 x 24 x 36 inch viewing box (Figure 4) with the white interior illuminated by an "illuminant C" contained the

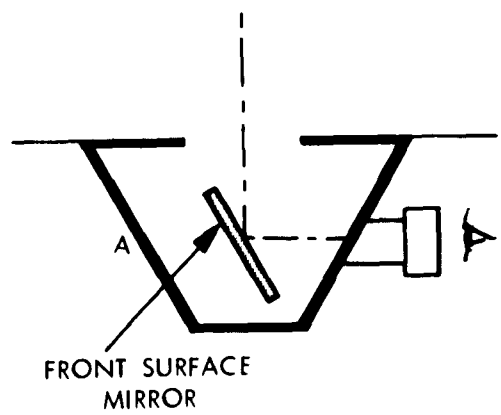
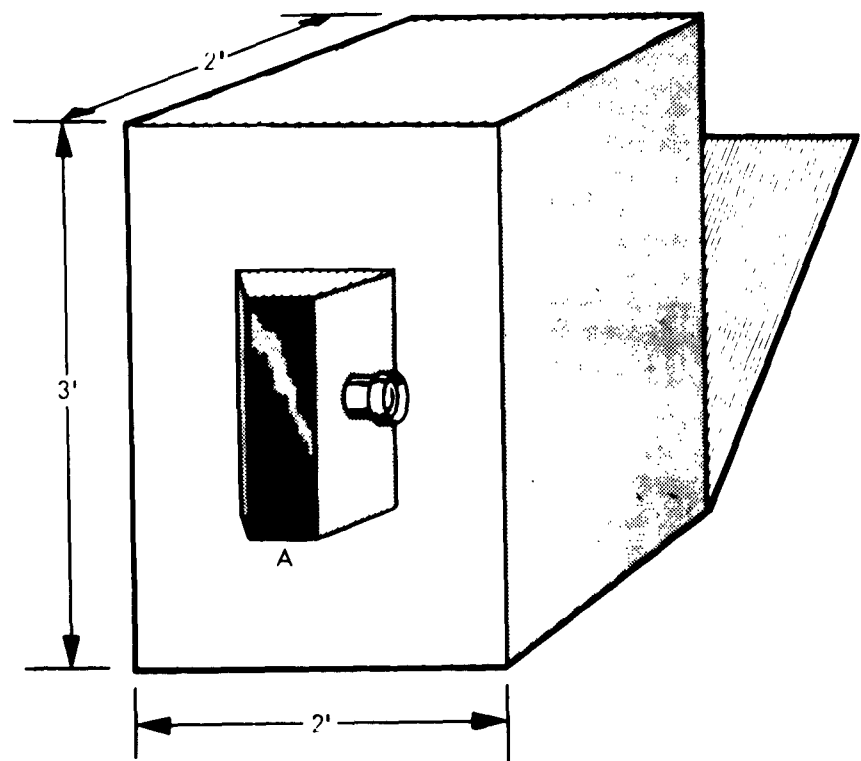


Figure 4. Viewing Box

matching chips. The chips presented the subjects were those used for stimuli, but for a given chip included all of the saturation steps below the one photographed (e.g., for stimulus 5 BG 5/8 the chips presented in the viewing box were 5 BG 5/8, 5/6, 5/4, 5/2, 5/1). The distance of the subjects left eye to the screen was 120 inches, while the distance from the right eye to the matching chips was 34 inches. These two distances resulted in equal visual angles being subtended by the stimuli and matching chips.

2.1.2 Subjects

One female (VC) and three male employees of the Applied Research Laboratory served as subjects. All had normal color vision.

2.1.3 Procedure

All subjects underwent training prior to the beginning of the experiment. During training they learned to make absolute judgments of hue and saturation of Munsell chips according to a somewhat modified version of the procedure employed by Helson, et al. (1952).

Each subject (S) was run under every combination of slides and projection filters, these combinations are given in Tables 3 and 4.

Table 3. Wavelengths of Filters Through Which Slide Combinations were Photographed.

<u>Combination No.</u>	<u>λ max 1</u>	<u>λ max 2</u>
1	452.7m μ	552.5m μ
2	452.7m μ	632.7m μ
3	552.5m μ	632.7m μ

Table 4. Wavelengths of Projection Filters Through Which Slide Combinations Were Photographed.*

<u>Combination No.</u>	<u>λ max Short Record</u>	<u>λ max Long Record</u>
1	452.7m μ	552.5m μ
2	452.7m μ	632.7m μ
3	452.7m μ	None
4	552.7m μ	632.7m μ
5	552.7m μ	None
6	632.7m μ	None
7	None	452.7m μ
8	None	552.5m μ
9	None	632.7m μ

Three subjects were run on three response procedures: absolute judgments, matching with all matching stimuli present, and matching with the matching stimuli presented one at a time. One subject (JG) contributed data under the absolute judgment condition only. This was due to the termination of his employment. All data was replicated once for each subject. Thus, a typical subject received all combinations of slides, projection filters and response procedures twice. Stimuli were projected with no ambient illumination and subjects adapted to the background illumination for ten minutes prior to the start of an experimental session. In the case of the absolute judgment procedure both of S's eyes were adapted to the background provided by the projectors and filters, while for the matching procedure S's left eyes were adapted to the projection light (25 ft. L)

* Each of these combinations was run with each of the three slide pairs in Table 3 for each subject.

while their right eyes adapted to the illumination inside the matching box (Illuminant "C" at 25 ft. L).

Subjects' responses were recorded in terms of Munsell Hue and Chroma.

2.2 NARROW BAND

2.2.1 Apparatus

Six black and white slides (35 mm) were prepared using eleven Munsell color chips as subject matter. Each slide was photographed through a different narrow band colored filter. (The details of slide preparation are presented in Appendix B). Table 1 above describes the chips which were arranged in two rows of four and one row of three. The colored filters used for photography with their wavelengths of maximum transmission are presented in Table 5.

Table 5. Narrow Band Filters and Wavelengths of Maximum Transmission (λ max).

	<u>Filter</u>	<u>λ max</u>	<u>Hues</u>
1.	CS 5-74	430m μ	Blue
2.	CS 4-104	485m μ	Blue Green
3.	CS 4-105	515m μ	Green
4.	W 73	575m μ	Yellow
5.	CS 2-78	640m μ	Red-Orange
6.	W 70	678m μ	Red

Densities of the stimuli and background on each slide (designated by λ max) are presented in Table 6.

Table 6. Stimuli and Background Densities.

Chip	Filter λ max (m μ)					
	430	485	515	575	640	678
5 YR	1.48	1.35	1.68	1.20	0.87	1.11
10 G	1.04	0.86	1.14	1.44	1.44	1.35
5 P	0.76	1.00	1.41	1.34	0.88	0.89
10 PB	0.71	0.92	1.32	1.36	1.02	0.88
Black	1.74	1.76	2.08	2.02	1.65	1.84
5 BG	0.90	0.78	1.12	1.44	1.43	1.36
5 R	1.10	1.20	1.62	1.25	0.77	1.10
White	0.48	0.51	0.72	0.68	0.42	0.64
5 B	0.80	0.82	1.20	1.42	1.32	1.26
5 Y	1.08	0.82	0.94	0.79	0.50	0.75
10 GY	1.26	1.00	1.22	1.30	1.32	1.38
Background	0.50	0.52	0.74	0.74	0.44	0.63

The projectors, sources, and screen were the same for the narrow band as for the broad band. The tristimulus values for the projection lamp and filters are presented in Appendix A. The viewing box and illuminant were also the same as those used with the broad band filters, however, additional matching chips, listed in Table 7, were employed.

Table 7. Munsell Hue, Value, Chroma and Remotation Number of Matching Chips.

<u>Hue</u>	<u>Remotation No.</u>	<u>Value</u>	<u>Chromas</u>
5 R	5	5	8, 6, 4, 2, 1
10 R	10	5	8, 6, 4, 2, 1

Table 7. Munsell Hue, Value, Chroma and Renotation Number of Matching Chips. (continued)

<u>Hue</u>	<u>Renotation No.</u>	<u>Value</u>	<u>Chromas</u>
5 YR	15	5	8, 6, 4, 2, 1
10 YR	20	5	8, 6, 4, 2, 1
5 Y	25	8	8, 6, 4, 2, 1
10 Y	30	8	8, 6, 4, 2, 1
5 YG	35	5	6, 4, 2, 1
10 YG	40	5	8, 6, 4, 2, 1
5 G	45	5	8, 6, 4, 2, 1
10 G	50	5	8, 6, 4, 2, 1
5 BG	55	5	8, 6, 4, 2, 1
10 BG	60	5	6, 4, 2, 1
5 B	65	5	6, 4, 2, 1
10 B	70	5	6, 4, 2, 1
5 PB	75	5	8, 6, 4, 2, 1
10 PB	80	5	8, 6, 4, 2, 1
5 P	85	5	8, 6, 4, 2, 1
10 P	90	5	8, 6, 4, 2, 1
5 PR	95	5	8, 6, 4, 2, 1
10 PR	100	5	8, 6, 4, 2, 1

The distance from subjects left eye to the screen was 108 inches, while the distance from the right eye to the matching chip was 34 inches. These distances resulted in equal visual angles being subtended by the stimuli and matching chips.

Sylvania 60 watt white, yellow, green, and red incandescent light bulbs, mounted above a diffusing surface provided the ambient illumination. High saturation ambient illumination was achieved by using colored bulbs only while low saturation was achieved by using both colored and white bulbs. The C.I.E. coordinates of these bulbs is given in Appendix A.

2.2.2 Subjects

Three male employees of the Applied Research Laboratory served as subject. All had normal color vision.

2.2.3 Procedure

Fifteen combinations of slides (Table 8) and 27 combinations of projection filters (Table 9) were combined factorially. These projection conditions in turn were combined factorially with seven conditions of ambient illumination. Different subjects underwent different conditions of ambient illumination. These conditions and the subjects used are presented in Table 10.

Table 8. Wavelengths of Filters Through Which Slide Combinations were Photographed.

<u>Combination No.</u>	<u>λ max₁</u>	<u>λ max₂</u>
1	430	485
2	430	515
3	430	575
4	430	640
5	430	678
6	485	515
7	485	575
8	485	640

Table 8. Wavelengths of Filters Through Which Slide Combinations were Photographed. (continued)

<u>Combination No.</u>	<u>λ max₁</u>	<u>λ max₂</u>
9	485	678
10	515	575
11	515	640
12	515	678
13	575	640
14	575	678
15	640	678

Table 9. Wavelengths of Projection Filters Through Which Slide Combinations were Projected.

<u>Combination No.</u>	<u>λ max Short Record</u>	<u>λ max Long Record</u>
1	430	485
2	430	515
3	430	575
4	430	640
5	430	678
6	430	No filter
7	485	515
8	485	575
9	485	640
10	485	678
11	485	No filter
12	515	575
13	515	640

Table 9. Wavelengths of Projection Filters Through Which Slide Combinations were Projected. (continued)

<u>Combination No.</u>	<u>λ max Short Record</u>	<u>λ max Long Record</u>
14	515	678
15	515	No filter
16	575	640
17	575	678
18	575	No filter
19	640	678
20	640	No filter
21	678	No filter
22	No filter	430
23	No filter	485
24	No filter	515
25	No filter	575
26	No filter	640
27	No filter	678

Table 10. Conditions of Ambient Illumination and Subjects Used with Each.

Illumination

<u>Hue</u>	<u>Saturation</u>	<u>Subject (S)</u>
White	--	AC and GF
Red	High	AC
Red	Low	GF
Green	High	WW
Green	Low	AC
Yellow	High	GF
Yellow	Low	GF

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All subjects responded by selecting one matching chip (viewed with the right eye). All matching chips were presented together since this procedure was revealed as the most efficient (considering reliability and time) in the collection of the broad band data. S's left eyes were adapted to ambient illumination and the background projected on the screen for 10 minutes prior to the start of an experimental session. During this period the subjects' right eyes were adapted to the "C" illumination in the matching box. Illumination level on the screen and in the box was 2 ft. L.

Subjects' responses were recorded in terms of Munsell Hue and Chroma.

SECTION 3

RESULTS

3.1 BROAD BAND

The wavelengths (in $m\mu$) and ranges of excitation purity (P_e)¹ of the stimulus chips and modal responses (with all response procedures pooled) are presented in Tables 11, 12, and 13. The data from which these tables were prepared is presented in Appendix C.

Table 14 indicates which hues were perceived by at least 5% of the S's with the various filter combinations employed.* Brief comments are also presented which list the hues not obtained with each filter pair and an explanation, where possible, of the reported colors in terms of traditional color mixture theory with consideration given to the effects of hues induced by the background color. Figure 5 through 8 are plots of the colors obtained with four sample pairs of filters as a function of the densities of the stimulus on the long and short records.

3.2 NARROW BAND

The wavelengths (in $m\mu$) and ranges of excitation purity (P_e) of the stimulus chips and the responses are presented in Appendix C. The hues perceived through the various filter combinations are presented in Table 15.² In this table responses under the same ambient illumination are pooled. A hue is listed for a given filter

* Ratio of.

1. Excitation purity (P_e) is defined as the ratio of two distances on the chromaticity diagram. The first distance (D_1) is that between the illuminant and the color in question. The second distance (D_2) is that between the illuminant and the point on the spectrum locus of the same dominant wavelength as the color in question. Since $D_1 \leq D_2$ excitation purity ranges from 0 to 1.
2. A detailed description of the manner used to determine the physical characteristics of the slides producing any given set of responses in Tables 14 and 15 is presented in Appendix D.

Table 12. Purity (P_e) Ranges Associated with Modal Responses (in π_r) for Slide Combination 2.

CHIP																				
	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	P _e	
	551	40	575	61	486	47	612	37	492	36	455	33	561c	31	499	27	587	67	6"	BACKGROUND
1	575	30-61	575	30-61	486	25-37	575	30-61	486	7-37	455	8-33	455	9-18	486	7-37	575	30-61	455	18-70
2	612	4-37	612	37-50	486	7-50	612	18-37	486	7-40	455	18-33	561c	4-17	486	7-37	612	18-46	561c	31-40
3	BLACK		575	30-61	486	13-50	575	18-61	486	7-37	455	8-33	561c	4-17	486	7-37	575	18-61	455	8-80
4	612	4-18	612	37-60	499	6-20	612	28-37	499	3-13	499	3-13	567	3-35	486	7-37	612	18-46	575	11-61
5	BLACK		561c	8-31	551	10-20	561c	8-24	551	5-10	551	5-20	551	5-20	BLACK		561c	8-31	551	20-60
6	BLACK		499	6-27	612	4-37	499	6-13	498c	5-30	612	9-37	612	4-18	612	4-18	499	3-20	612	9-70
			492	3-36			432	3-27							498c	4-15				
7	436	7-13	486	25-50	575	18-61	486	7-37	575	18-61	575	11-30	561c	3-17	575	11-61	486	13-50	455	4-50
			455	26-33																
8	BLACK		551	10-43	561c	8-17	551	10-31	561c	8-31	612	4-18	575	11-18	561c	4-8	499	6-13	572	11-60
											561c	4-17								
9	BLACK		612	37-60	499	6-13	612	9-37	492	3-18	499	3-6	612	4-18	BLACK		612	9-46	612	9-60

PROTECTION FILTER COMBINATION NO.

PROJECTION FILTER COMBINATION NO.

CHIP																			
	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	
	551	40	575	61	486	47	612	37	492	36	455	33	561c	31	499	27	587	67	BACKGROUND
1	496	7-45	575	11-18	486	7-45	575	18-61	486	7-45	455	4-8	575	11-48	486	7-45	575	11-61	455 8-70
2	496	7-45	498c	15-42	486	7-45	612	25-50	486	7-45	498c	5-22	498c	5-22	486	13-45	612	18-37	498c 15-50
3	496	7-50	575	11-18	496	7-50	575	11-61	486	7-50	575	11-30	575	11-48	486	13-50	575	18-48	455 4-57
4	551	10-31	575	11-61	551	5-31	612	18-37	551	10-31	587	8-18	612	9-28	499	6-13	612	18-37	575 11-61
5	551	5-20	575	11-18	551	5-20	561c	8-31	551	5-20	587	8	561c	4-24	551	5-20	561c	8-24	WHITE
6	612	9-70	612	4-60	612	4-60	492	3-18	612	9-50	612	4-9	499	3-6	612	9-46	499	6-13	612 18-70
7	572	17-32	561c	4-45	572	11-32	455	8-33	572	32	561c	4-24	455	4-18	572	32-47	455	8-33	WHITE
			455	4-40											575	30-61			
8	612	4-9	575	11-30	612	4-9	551	10-20	612	4-18	587	8-18	551	5-20	498c	4-15	551	5-20	WHITE
					587	8-35													575 11-48
9	499	3-9	575	11-30	551	5-20	575	11-30	551	10-20	612	4-9	612	9-28	551	10-20	612	9-28	WHITE

PROJECTION FILTER COMBINATION NO.

Table 14. Hues Produced by Various Filter Combinations.

PROJECTION FILTER COMBINATION	PERCEIVED BACKGROUND HUE (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
1) blue & green (453 & 533m μ)	blue (455m μ)	a) green (551m μ) b) blue (455,486m μ) c) yellow (575m μ)	reds and purples missing. a,b) traditional color mixture theory predictions. c) a grey spot would take on the hue of the complement of the background. Since the background is 455m μ , the induced color would be yellow of about 570m μ .
2) blue & red (453 & 633m μ)	purple (561c m μ)	a) red (612m μ) b) blue (455,486m μ) c) purple (498c,561c m μ)	yellows and greens missing. all colors predicted by traditional color mixture theory.
3) blue & incandescent (453 & 583m μ *)	blue (455m μ)	a) yellow (572,575m μ) b) blue (455,486m μ) c) purple (561c m μ)	reds and greens missing. all traditional predictions.
4) green & red (533 & 633m μ)	yellow (575m μ)	a) red (612m μ) b) green (551,499m μ) c) yellow (575m μ) d) blue (492,486m μ) e) purple (561c m μ)	a,b,c) red,green and yellow predicted by traditional mixture theory. d) blue induced by the yellow background in a spot in which red cancels most but not quite all the green, i.e., yellow induces 474m μ which mixes with some green to give 486 and 492m μ . e) purple: yellow background induces 474m μ which mixes with some projected red to produce purple.

*The incandescent lamp had a wavelength of 583m μ and a purity of 50%.

Table 14. Hues Produced by Various Filter Combinations (continued)

PROJECTION FILTER COMBINATION	PERCEIVED BACKGROUND HUE (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
5a) green and incandescent (553 & 583m μ)	green (551m μ)	a) green (551m μ) b) purple (561c m μ) c) blue (499m μ)	no red, yellow. a) green expected on basis of law of intermediates. b) purple produced by mixture of a little red-yellow (583m μ) with the induced complement (551c m μ) of the background (551m μ) c) blue: induced purple (561c m μ) plus projected green (553m μ) produces blue.
5b) green and incandescent (553 & 583m μ)	yellow (572-575m μ)	a) green (551m μ) b) yellow (575m μ) c) purple (561c m μ) d) blue (499m μ) e) red (612m μ)	atb) green and yellow expected on basis of law of intermediates. c) purple produced by mixture of a little red-yellow (583m μ) with the induced complement (475m μ) of the yellow background. d) blue produced by mixture of a little yellow (553m μ) with the induced complement (475m μ) of the yellow background. e) red: yellow-red (583m μ) seen in a yellow background (572-575m μ) would appear more red due to contrast effects.
6) red and incandescent (633 & 583m μ)	red (612m μ)	a) red (612m μ) b) yellow (587m μ) c) blue (499, 492m μ) d) purple (498c m μ)	green missing. atb) red and yellow are predicted by the law of intermediates. c) blue (492m μ) is the approximate complement of red (612m μ) therefore could be induced by the background in a neutral spot. Blue (499m μ) could be produced by a mixture of a little yellow (583m μ) from the lamp with blue of 490m μ induced by the background. d) purple (498c m μ) produced by a mixture of induced blue (490m μ) and some projected red in the same spot.

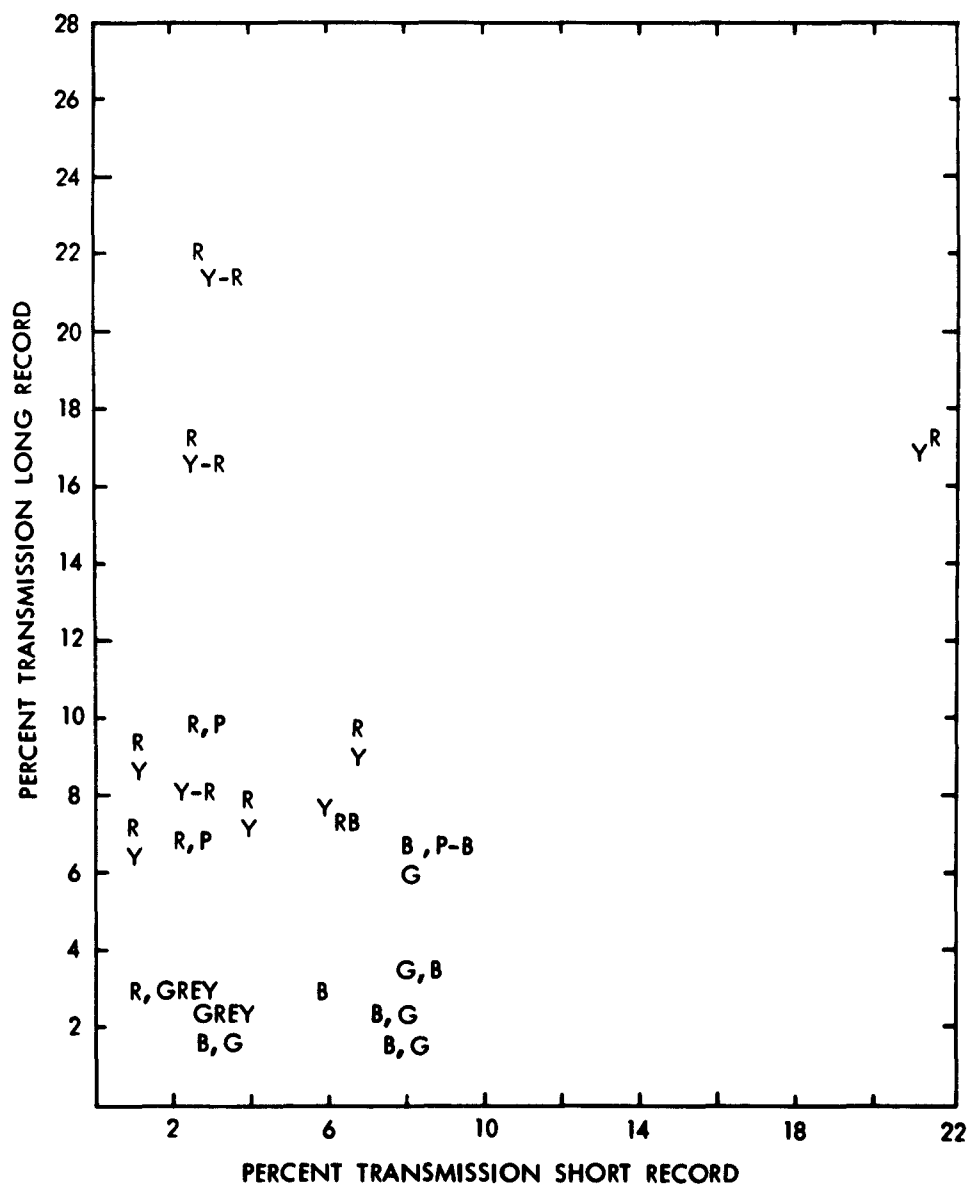


Figure 5. Colors Reported as a Function of Densities of Long and Short Records with the Long Record Projected Through the Red Filter and the Short Record with No Filter

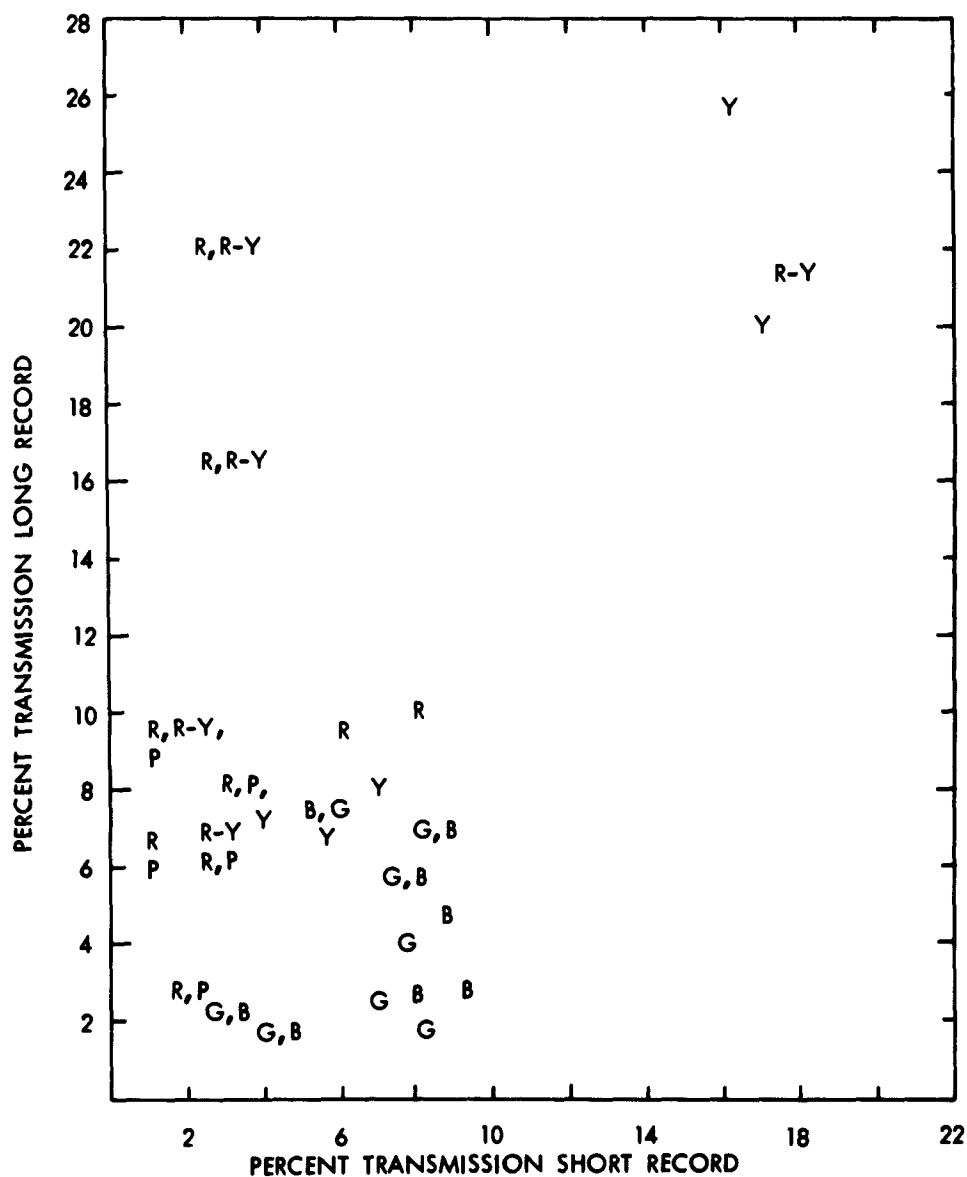


Figure 6. Colors Reported as a Function of Densities of Long and Short Records with the Long Record Projected Through the Red Filter and the Short Record Through the Green Filter

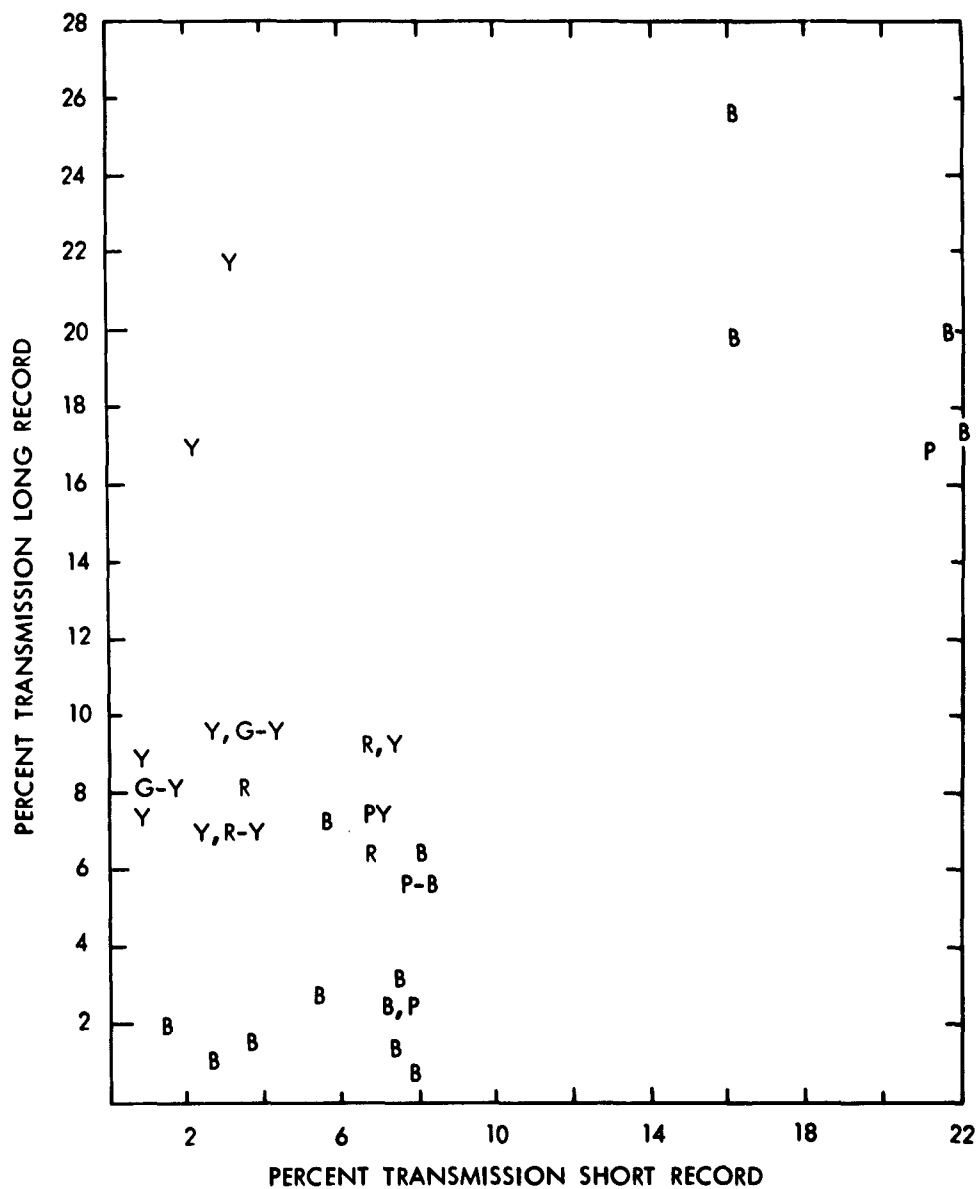


Figure 7. Colors Reported as a Function of Densities of Long and Short Records with the Long Record Projected Through the Green Filter and the Short Record Through the Blue Filter

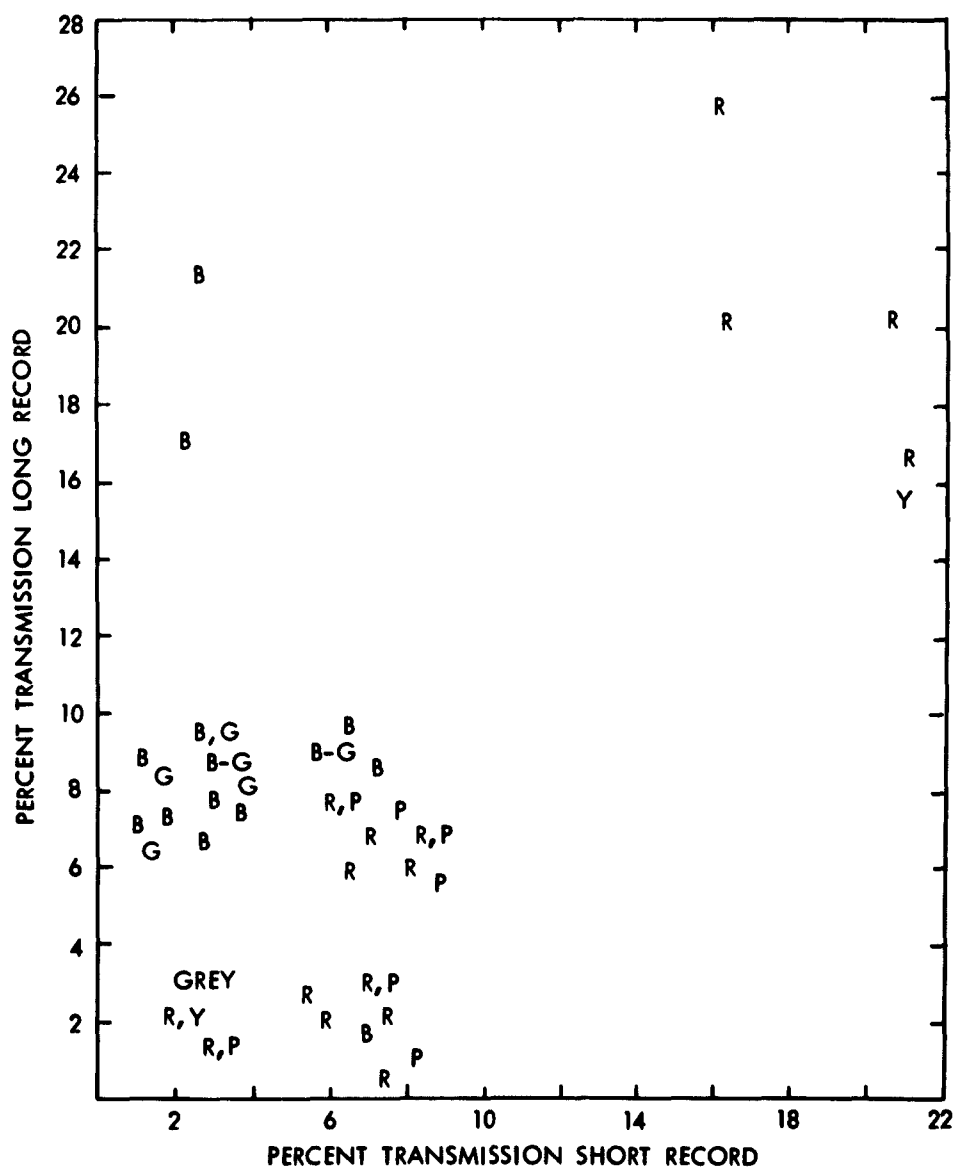


Figure 8. Colors Reported as a Function of Densities of Long and Short Records with the Long Record Projected Through No Filter and the Short Record Through the Red Filter

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
1) 430 & 485m μ	a) white	blue (455-480m μ)	a) yellow b) red-yellow c) purple	MISSING: green, blue, red a&b) yellow and red-yellow are obtainable as complements of the blue background. c) purples produced by mixtures of small amounts of projected 430 with larger amounts of induced red-yellow.
	b) red	blue (455-485m μ)	a) yellow b) blue c) red d) purple	MISSING: green a&b) yellow and blue produced by projection filters and induced effects by the blue background. c) red obtainable from ambient illumination. d) purple produced by red ambient added to projected blue.
	c) green	blue (455-480m μ)	a) yellow b) blue c) red-yellow	MISSING: red, green, purple a,b&c) yellow, blue, and red-yellow are all explained by the law of intermediates and induced color.
	d) yellow	blue (455-480m μ)	a) yellow b) red-yellow c) purple	MISSING: green, blue, red a,b&c) explanation in 1a above applies.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
2) 430 & 515m μ	a) white	blue (455-480m μ)	a) yellow b) purple	MISSING: green, blue, red a&b) yellow is complement of background; purple is a mixture of small amount blue (430) and large amount yellow-red induced by background (480).
	b) red	blue (475-485m μ)	a) yellow b) red c) blue d) purple	MISSING: green a) yellow induced by blue background. b) red produced by ambient illumination. c) blue produced by filters. d) purple produced by mixing ambient red with projected blue.
	c) green	blue (455-485m μ)	a) yellow b) blue c) purple d) yellow-green	MISSING: red, green a) yellow induced by background. b) blue produced by filters. c) purple ? d) yellow-green mixture of induced yellow with green filter or green ambient illumination.
	d) yellow	blue (455-485m μ)	a) yellow b) red-yellow c) purple	MISSING: blue, green, red a&b) yellow and red-yellow induced by blue background. c) purple mixture of small amounts of blue (430) with large amounts of induced red-yellow.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
3) 430 & 575m μ	a) white	purple (561c m μ)	a) yellow b) purple c) blue	MISSING: red, green a) yellow produced by yellow filter (575). b) purple: same as background. c) blue produced by blue filter.
	b) red	blue (455-485m μ)	a) yellow b) purple c) red d) blue	MISSING: green a) yellow produced by yellow filter (575). b) purple mixture of blue background with red ambient illumination. c) red: ambient. d) blue: same as background.
		purple (538c-461c m μ)	a) yellow b) blue c) purple d) red-yellow e) green-yellow	MISSING: green, red a) yellow produced by yellow filter. b) blue produced by blue filter. c) purple: background. d) red-yellow: yellow filter plus ambient red. e) green-yellow: intermediate between two filters.
	c) green	purple (498c-561c m μ)	a) yellow b) blue c) green d) purple	MISSING: red a) yellow: yellow filter. b) blue: blue filter. c) green: ambient illumination. d) purple: background (mixture of 430&575).
	d) yellow	purple (561c m μ)	a) yellow b) purple	MISSING: red, green, blue a) yellow: yellow filter. b) purple: background (mixture of 430&575).

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
4) 430 & 640m μ	a) white	purple (538c-561c m μ)	a) yellow b) blue c) purple d) red-yellow	MISSING: red, green a) yellow: complement of background. b) blue: blue filter. c) purple: background (430&640). d) red-yellow: complement of background (560) plus a small amount of red (640).
	b) red	purple (498c-538c m μ)	a) red b) purple c) yellow d) blue	MISSING: green a) red: red filter and ambient illumination. b) purple: background (430&640) with addition of red ambient illumination. c) yellow: complement of background with some projected red added. d) blue: blue filter.
	c) green	purple (498c-538c m μ)	a) green b) yellow c) blue	MISSING: red, purple a) green: blue filter plus green ambient illumination. b) yellow: red filter plus green ambient. c) blue: blue filter.
	d) yellow	purple (538c-561c m μ)	a) yellow b) blue c) purple d) red-yellow	MISSING: red, green a) yellow: ambient illumination. b) blue: blue filter c) purple: red and blue filters. d) red-yellow: red filter plus yellow ambient illumination.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
5) 430 & 678m μ	a) white	purple (538c-561c m μ)	a) yellow b) green c) blue d) purple e) red	a) yellow: complement of background plus some red (678). b) green: complement of background plus some blue 430 c) blue: blue filter. d) purple: blue and red filters. e) red: red filter.
	b) red	purple (498c-538c m μ)	a) red b) yellow c) purple d) blue	MISSING: green a) red: red filter. b) yellow: complement of background (538) plus red (678). c) purple: red plus blue filters. d) blue: blue filter.
	c) green	purple (538c-561c m μ)	a) yellow b) green c) blue d) purple	MISSING: red a) yellow: complement of background plus red. b) green: ambient illumination or complement of background. c) blue: blue filter. d) purple: red plus blue filters.
	d) yellow	purple (538c-561c m μ)	a) yellow b) red c) purple	MISSING: green, blue a) yellow: complement of background (561) plus red (678). b) red: red filter. c) purple: red plus blue filters.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
6) 430 & None*	a) white	purple (561c m _p)	a) yellow b) blue c) purple	MISSING: red, green a) yellow: complement of background plus red from incandescent source (561c583). b) blue: blue filter. c) purple: blue plus incandescent* (430c 583).
		blue (455m _p)	a) yellow b) blue	MISSING: red, green, purple a) yellow: complement of blue (455) is 570. b) blue: blue filter
	b) red	blue (455m _p)	a) yellow b) blue c) purple d) red	MISSING: green a) yellow: complement of blue background. a) blue: blue filter. c) purple: blue filter plus red ambient illumination. d) red: ambient illumination.
		purple (561c m _p)	a) yellow b) blue c) purple d) red	MISSING: green a) complement of purple background plus red ambient illumination. b) blue: blue filter. c) purple: blue filter plus incandescent* source and ambient illumination. d) red: incandescent* source plus ambient illumination.

* The incandescent lamp (sylvania E08 750w) had a wavelength of 583m_p and a purity of 50%.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
6) 4:0 & None* (cont'd)	c) green	purple (538c-561c m _p)	a) green b) yellow c) blue d) purple	MISSING: red a) green: ambient illumination. b) yellow: complement of purple background. c) blue: blue filter. d) purple: blue filter plus incandescent*.
	d) yellow	purple (561c m _p)	a) yellow b) purple	MISSING: red, green, blue a) yellow: ambient illumination. b) purple: blue plus incandescent (583m _p).
7) 485 & 515m _p	a) white	green (514-551m _p)	a) yellow b) red c) blue d) green	MISSING: purple a) yellow? b) red? c) blue: blue filter. d) green: green filter.
	b) red	blue (488-500m _p)	a) red b) green	MISSING: blue, purple, yellow a) red: complement of blue background. b) green: green filter.
	b) red	green (500-550m _p)	a) green b) blue c) red d) yellow	MISSING: purple a) green: green filter. b) blue: blue filter. c) red: ambient illumination. d) yellow: mixture of green background and red ambient illumination.

*The incandescent lamp (Sylvania ID8 750W) had a wavelength of 583m_p and a purity of 50%.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
7) 485 & 515m (cont'd)	c) green	green (514-551m)	a) red b) green c) yellow	MISSING: blue, purple a) red ? b) green: green filter.. c) yellow ?
	d) yellow	blue-green (492-514m)	a) red b) green c) yellow	MISSING: blue, purple a) red: complement of 492 is red of 640. b) green: green filter. c) yellow: ambient illumination or mixture of red induced by the background and green from filter.
8) 485 & 575m	a) white	blue-green (490-500m)	a) red b) blue c) yellow d) purple	MISSING: green a) red: complement of blue of 490 (background) is red of 607. b) blue: blue filter. c) yellow: yellow filter. d) purple: induced red plus projected blue.
		green (500-550m)	a) yellow b) purple c) red	MISSING: green, blue a) yellow: yellow filter. b) purple: induced complement of background. c) red: induced purple mixed with yellow of filter produces red.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
e) 485 & 575mμ (cont'd)	b) red	green (500-550mμ)	a) yellow b) red c) blue d) purple e) green	a) yellow: yellow filter. b) red: ambient illumination. c) blue: blue filter. d) purple: complement of background. e) green: mixture of two filter hues.
	c) green	green (514-566mμ)	a) green b) red c) yellow d) blue	MISSING: purple a) green: mixture of two filter hues. b) red: purple induced by background plus yellow of filter produces red. c) yellow: yellow filter. d) blue: blue filter.
	d) yellow	blue (488-500mμ)	a) red b) yellow c) purple	MISSING: blue, green a) red: complement of blue background. b) yellow: yellow filter. c) purple: induced red plus projected blue.
		green (514-551mμ)	a) red b) yellow c) purple	MISSING: blue, green a) red: purple induced by background plus projected yellow. b) yellow: yellow filter. c) purple: complement of background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
9) 485 & 640m μ	a) white	blue (481-500m μ)	a) red b) blue c) green d) purple e) yellow	a) red: red filter. b) blue: blue filter. c) green: mixture of yellow of 581 induced by background and some projected blue of 485. d) purple: mixture of red plus blue. e) yellow: complement of background of 481 is yellow of 581.
		green (551-566m μ)	a) green b) yellow	MISSING: red, blue, purple a) green: background hue. b) yellow: mixture of green background and projected red.
	b) red	blue (488-500m μ)	a) red b) blue c) purple	MISSING: yellow, green a) red: red filter. b) blue: blue filter. c) purple: a + b.
		green (514-566m μ)	a) red b) green	MISSING: yellow, blue, purple a) red: red filter. b) green: background hue.
	c) green	green (514-566m μ)	a) green b) red c) blue d) yellow	MISSING: purple a) green: background hue. b) red: red filter. c) blue: blue filter. d) yellow: green background and projected red.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
9) 485 & 640m μ (cont'd)	d) yellow	blue (486-500m μ)	a) red b) blue c) yellow d) purple e) green	a) red: red filter. b) blue: blue filter. c) yellow: complement of blue background. d) purple: mixture of red and blue filters. e) green: yellow induced by background plus some projected blue.
	a) white	blue (486-500m μ)	a) yellow b) red c) green d) blue e) purple	a) yellow: complement of blue background. b) red: red filter. c) green: yellow induced by background plus some projected blue. d) blue: blue filter. e) purple: red plus blue filters.
10) 485 & 678m μ	b) red	blue (486-500m μ)	a) blue b) red c) purple	MISSING: green, yellow a) blue: blue filter. b) red: red filter. c) purple: blue p'is red filters.
		green (514-566m μ)	a) red	MISSING: green, yellow, blue, purple a) red: red filter.
	c) green	blue (488-500m μ)	a) red b) blue c) green d) yellow	MISSING: purple a) red: red filter. b) blue: blue filter. c) green: yellow induced by background plus projected blue. d) yellow: complement of background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
10) 485 & 676mμ (cont'd)	d) yellow	blue (486-492mμ)	a) red b) blue c) yellow	MISSING: green, purple a) red; red filter. b) blue; blue filter. c) yellow; complement of background.
11) 485 & None	a) white	blue (486-500mμ)	a) red b) yellow c) blue d) purple	MISSING: green a) red; incandescent source has a wave-length of 583mμ. b) yellow; complement of blue background c) blue; blue filter. d) purple; blue filter plus incandescent.
	b) red	green (500-550mμ)	a) red b) purple c) blue d) green e) yellow	a) red; incandescent lamp and/or ambient illumination. b) purple; blue filter plus incandescent. c) blue; blue filter. d) green; background. e) yellow; green of background plus incandescent.
	c) green	green (514-566mμ)	a) red b) green c) yellow	MISSING: blue purple a) red; incandescent source. b) green; background and ambient illumination. c) yellow; red from incandescent plus green from background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
11) 485 & None (cont'd)	d) yellow	blue (481-499m μ)	a) red b) yellow c) purple	MISSING: blue, green a) red: incandescent source. b) yellow: complement of blue background c) purple: incandescent source (red) plus blue filter.
12) 515 & 575m μ	a) white	green (514-566m μ)	a) red b) yellow c) green d) purple	MISSING: blue a) red: purple induced by background plus some projected yellow. b) yellow: yellow filter. c) green: green filter. d) purple: complement of background.
	b) red	green (514-551m μ)	a) purple b) yellow c) red d) green	MISSING: blue Same as 12a above
	c) green	green-yellow (566-572m μ)	a) red b) green c) yellow	MISSING: blue, purple a) red: purple induced by background of 566 plus some projected yellow. b) green: green filter. c) yellow: yellow filter.
	d) yellow	green (514m μ)	a) red b) green c) purple d) yellow	MISSING: blue Same as 12a above.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
13) 515 & 640m μ	a) white	green (514-566m μ)	a) red b) green c) yellow d) purple	MISSING: blue a) red: red filter. b) green: green filter. c) yellow: red plus green. d) purple: complement of green background.
	b) red	green (551-566m μ)	a) red b) green c) purple d) yellow e) blue	a) red: red filter. b) green: green filter. c) purple: complement of green background. d) yellow: red plus green. e) blue: induced purple (strong) plus weak projected green produce blue.
	c) green	yellow-green (566-572m μ)	a) green b) red c) blue d) yellow	MISSING: purple a) green: green filter. b) red: red filter. c) blue: complement of backgrounds from 568 to 572. d) yellow: red plus green.
	d) yellow	green (514-551m μ)	a) red b) green c) blue d) purple	MISSING: yellow a) red: red filter. b) green: green filter. c) blue: induced purple plus projected green. d) purple: complement of green background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
14) 515 & 678mμ	a) white	green (514-566mμ)	a) red b) green c) yellow d) purple e) blue	a) red: red filter. b) green: green filter. c) yellow: red plus green. d) purple: complement of green background. e) blue: induced purple plus projected green.
	b) red	green (514-551mμ)	a) red b) green c) yellow d) purple	MISSING: blue a) red: red filter. b) green: green filter. c) yellow: red plus green. d) purple: complement of green background.
	c) green	green (551-566mμ)	a) red b) green c) yellow	MISSING: blue, purple a) red: red filter. b) green: green filter. c) yellow: red plus green.
	d) yellow	green (514mμ)	a) red b) green c) purple d) yellow	MISSING: blue Same as 14b above.
15) 515 & None	a) white	green (514-551mμ)	a) red b) yellow c) blue d) purple	MISSING: green a) red: incandescent lamp. b) yellow: red plus green. c) blue: induced purple plus projected green. d) purple: complement of green background.

TABLE 15. Mass Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (INDICAL RESPONSES)	PERCEIVED BACKGROUND (INDICAL RESPONSES)	PERCEIVED STIMULUS NOTES	COMMENT
15) 515 & None (cont'd)	b) red	green (514-551m.)	a) red b) purple c) yellow d) green	MISSING: blue a) red: incandescent source. b) purple: complement of green background. c) yellow: red plus green. d) green: green filter.
	c) green	green (551-566m.)	a) red b) green c) yellow	MISSING: blue, purple a) red: incandescent source. b) green: green filter. c) yellow: red plus green.
	d) yellow	green (514m.)	a) red b) green c) purple d) yellow	MISSING: blue Same as 12b above.
16) 575 & 640m.	a) white	yellow (575-583m.)	a) yellow b) blue c) red d) purple e) green	a) yellow: yellow filter. b) blue: complement of yellow background. c) red: red filter. d) purple: induced blue plus projected red. e) green: induced blue plus projected yellow.
	b) red	yellow (572-583m.)	a) yellow b) blue c) red d) purple e) green	Same as 16a.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
16) 575 & 640m μ (cont'd)	c) green	yellow (575-583m μ)	a) yellow b) red c) blue d) green e) purple	Same as 16a.
	d) yellow	red-yellow (575-587m μ)	a) red b) green c) blue d) purple e) yellow	Same as 16a.
17) 575 & 678m μ	a) white	yellow (572-583m μ)	a) yellow b) blue c) red d) purple	MISSING: green a) yellow: yellow filter. b) blue: complement of background. c) red: red filter. d) purple: induced blue plus projected red.
	b) red	yellow (572-575m μ)	a) red b) purple c) blue d) yellow e) green	a) red: red filter. b) purple: induced blue plus projected red. c) blue: complement of background. d) yellow: yellow filter. e) green: induced blue plus projected yellow.
		green (551-566m μ)	Same as with yellow background	a) red: red filter. b) purple: complement of green background. c) blue: induced purple plus green background. d) yellow: yellow filter. e) green: background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
17) 575 & 670mμ (cont'd)	c) green	yellow (575-583mμ)	a) red b) purple c) blue d) yellow e) green	Same as 17b.
	d) yellow	yellow-green (566-583mμ)	a) red b) purple c) blue d) yellow e) green	Same as 17b.
18) 575 & None	a) white	yellow-green (566-575mμ)	a) yellow b) blue c) purple d) red	MISSING: green a) yellow: yellow filter. b) blue: complement of yellow background. c) purple: induced blue plus red from incandescent lamp. d) red: incandescent lamp.
	b) red	green (514-566mμ)	a) red b) green c) yellow d) blue e) purple	a) red: incandescent lamp. b) green: background. c) yellow: yellow filter. d) blue: induced purple plus projected green. e) purple: complement of background.
	c) green	yellow (572-583mμ)	a) green b) yellow c) red d) blue e) purple	a) green: projected yellow plus induced blue. b) yellow: yellow filter. c) red: incandescent source. d) blue: complement of yellow background. e) purple: projected red and induced blue.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
18) 575 & None (cont'd)	d) yellow	green (551-56mμ)	a) green b) red c) yellow d) blue e) purple	Same as 18b.
19) 640 & 678mμ	a) white	red (595-612mμ)	a) red b) blue	MISSING: green, blue, purple a) red: red filter. b) blue: complement of red background.
	b) red	red (595-612mμ)	a) red b) blue c) green d) purple	MISSING: blue a) red: red filter. b) blue: complement of red background. c) green? d) purple: induced blue plus projected red.
	c) green	red (595-612mμ)	a) red b) blue c) green d) yellow e) purple	a) red: red filter. b) blue: complement of red background. c) green: produced in neutral areas by ambient illumination. d) yellow: projected red plus green ambient. e) purple: projected red plus induced blue.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
19) 640 & 678m μ (cont'd)	d) yellow	red (595m μ)	a) red b) blue c) purple	a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue.
20) 640 & None	a) white	red (587-612m μ)	a) red b) blue c) purple d) yellow e) green ?	a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue. d) yellow ? e) green ?
	b) red	red (587-612m μ)	a) red b) blue c) purple	MISSING: green, yellow a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue.
		yellow (572-575m μ)	a) red b) yellow	MISSING: blue, green, purple a) red: red filter. b) yellow: background.
	c) green	red (587-612m μ)	a) red b) blue c) green d) yellow e) purple	a) red: red filter. b) blue: complement of red background. c) green: ambient illumination. d) yellow: projected red plus ambient green. e) purple: projected red plus induced blue.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
20) 640 & None (cont'd)	d) yellow	red (612m)	a) red b) blue c) purple	MISSING: green, yellow a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue.
21) 678 & None	a) white	red (587-612m)	a) red b) blue c) purple	MISSING: green, yellow a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue.
		purple (498c-561c m)	a) yellow b) blue c) purple	MISSING: red, green a) yellow: complement of background of 561c. b) blue: complement of background of 498c. c) purple: background.
	b) red	green-green-yellow (515-572m)	a) red b) yellow c) purple	MISSING: green, blue a) red: red filter. b) yellow: background color (572). c) purple: complement of background (500-550).

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
21) 678 & None (cont'd)	c) green	yellow (572-587m μ)	a) yellow b) green c) blue	MISSING: red, purple a) yellow: background. b) green: ambient illumination. c) blue: complement of yellow background.
	d) yellow	red (595-612m μ)	a) red b) blue c) purple	MISSING: green, yellow a) red: red filter. b) blue: complement of background. c) purple: projected red plus induced blue.

combination only if it occurred at least 5% of the time (i.e., occurred about 15 times). As with the Broad Band data, the missing hues are listed as well as an explanation of the perceived hues in terms of classical color mixture theory and color induction.

SECTION 4

DISCUSSION OF RESULTS

4.1 BROAD BAND

As can be seen in Tables 11, 12, and 13, the fidelity with which a two-component color system, such as the one here, can be expected to produce the actual hues and saturations photographed, is quite low relative to a three component system. Of the twenty-seven experimental conditions employed, the greatest number of correct hue responses was four in a series of nine. In addition, and probably contributing to the problem of hue fidelity, is the observation that stimuli frequently tend to become desaturated relative to the original stimulus material.

The other (and perhaps more important) practical consideration - the extent of the range of colors obtainable with a two-color system - seems to receive a more promising answer. Table 14 shows that with certain combinations of projection filters and the density combinations employed here, a full range of colors is attainable. Although only two (green and red, and green and incandescent) of the nine projection conditions employed here yielded a full range of colors, it is quite possible that with different density combinations some or all of the other conditions would have yielded these colors. On the basis of this finding, two-component colored displays are shown to have utility, at least in special situations where the additional saturation to be had with a three-component system is unnecessary.

Also presented in Table 14 are possible explanations, within the framework of classical color mixture theory, of why these hues were perceived as they were. With the additional, well-supported assumption concerning induced colors, it is seen that classical color mixture theory is adequate to explain all of the hues reported here. It should be noted, however, that these explanations are not intended to be complete, that is, there may be, and probably are, other explanations equally valid to explain any given perceived color.

Figures 5 through 8 show that the data from the present study, for the most part, agree with Land's (1959 a) plot of perceived hues as a function of transmission of the long and short records. In a few cases, hues appear on the "wrong" side of the neutral line representing equal densities, however, the distance from the "correct" position is always small.

It should be noted that the data presented in the Broad Band Results section represents modal responses of twenty trials per cell. An indication of the spread of these responses, necessary for any practical applications, can be obtained from Appendix C in which the raw data are presented.

4.2 THEORETICAL ANALYSIS*

A small portion of the experimental color data obtained under the present contract was used to check the color theory proposed earlier by Yilmaz (1962). The theory is found to be quantitatively consistent with the data. The small quantities ξ , η , and ζ^{**} were not possible to evaluate exactly due to larger individual errors of observation. It was concluded that the introduction of a curved color space is not necessary to cover the data although there were indications that metric behavior might not be valid rigorously. In reaching these conclusions use was also made of an earlier work by Burnham, Evans, and Newhall (1957). A brief summary of the analysis follows.

According to our color theory the situation arising in a transformation from one illuminant to another can best be described with our α , β , γ coordinate system. Since this system is rather unfamiliar at the present time, we will try to case the conclusions into

* This theoretical evaluation was published as Applied Research Laboratory RR No. 338 by H. Yilmaz and G. Biernson and was supported under Contract No. AF33(657)-8681.

** See Section 1.3.

a slight generalization of the C.I.E. chromaticity diagram. For our immediate purpose the generalization consists essentially of introducing small nonhomogeneous terms into the transformation formulae.

In Figure 9 the plane, $\gamma = \text{constant}$, corresponds roughly to $X + Y + Z = 1$. On this plane a chromaticity diagram (a) is indicated. The projection of this diagram on the XY plane is the usual C.I.E. chromaticity diagram (b). The projection of the illuminant C is indicated as C. A psychological maximum saturation curve, Σ , is indicated as a circle (idealized theory) on the $X + Y + Z = 1$ plane. The projection of this on the XY plane will be an ellipse. According to the idealized theory a change in illuminant from γ to γ' carries C to C' and consequently C_1 is carried to C'_1 . Similarly, every point of the plane is carried uniquely to another point. In particular, every closed curve around C is carried to another closed curve around C'. The same is true for their projections on the chromaticity diagram.

Figure 10 shows on the C.I.E. diagram contours of constant Munsell chroma under different illuminations as determined from the transformations performed by Burnham, Evans, and Newhall (1957). The illuminants are the standard C.I.E. illuminants C and A and a green illuminant which Burnham, et al, refer to as G. Contours are shown for all three illuminants for Munsell value 5 and chroma 2 and 4. The corresponding contour for chroma 8 is also shown for illuminant C. The Munsell chips to be discussed in the Sylvania color matching experiments lie along this chroma 8 contour.

According to the theory, the projected curves are slightly shifted due to the small inhomogeneous terms ξ , η , and ζ so that γ' line does not meet γ at the origin, 0, as in the classical theories. Rather a new origin, 0', is formed and γ' meets α' and β' at this new origin (Figure 9). For example, in considering the curve around A when the transformation is from C to A the curve is to be shifted slightly in the direction of A. This shift in itself would be

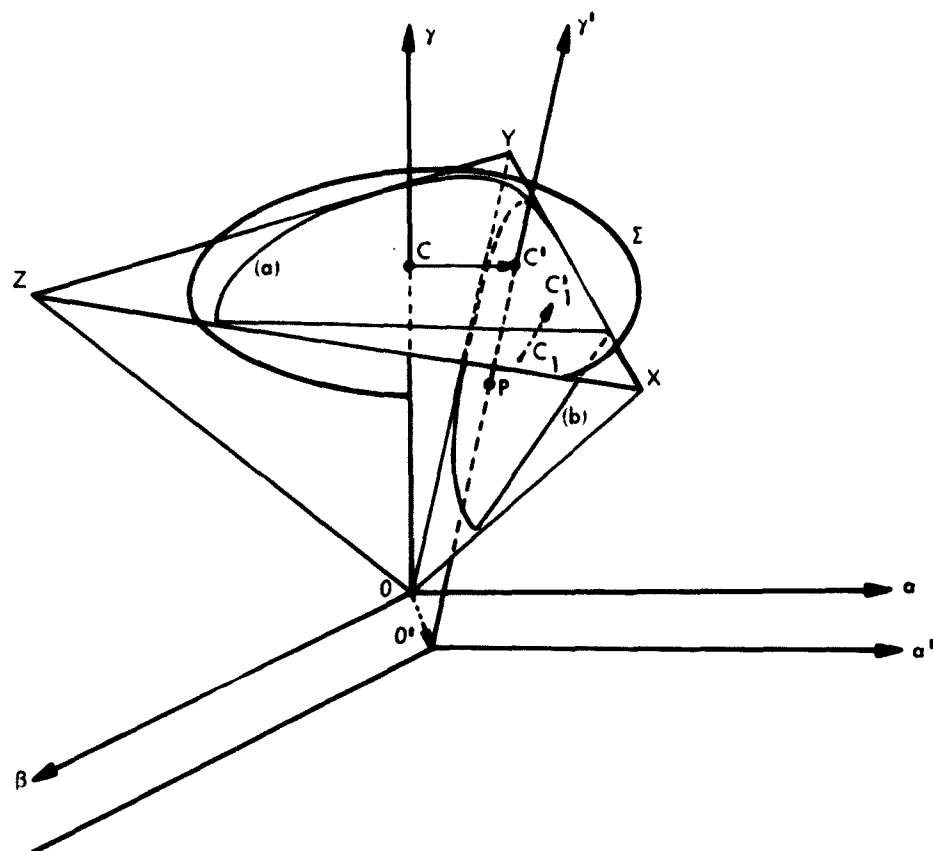


Figure 9. Illustrating the Relationships Between the Theory and the Transformations on the C.I.E. Chromaticity Diagram

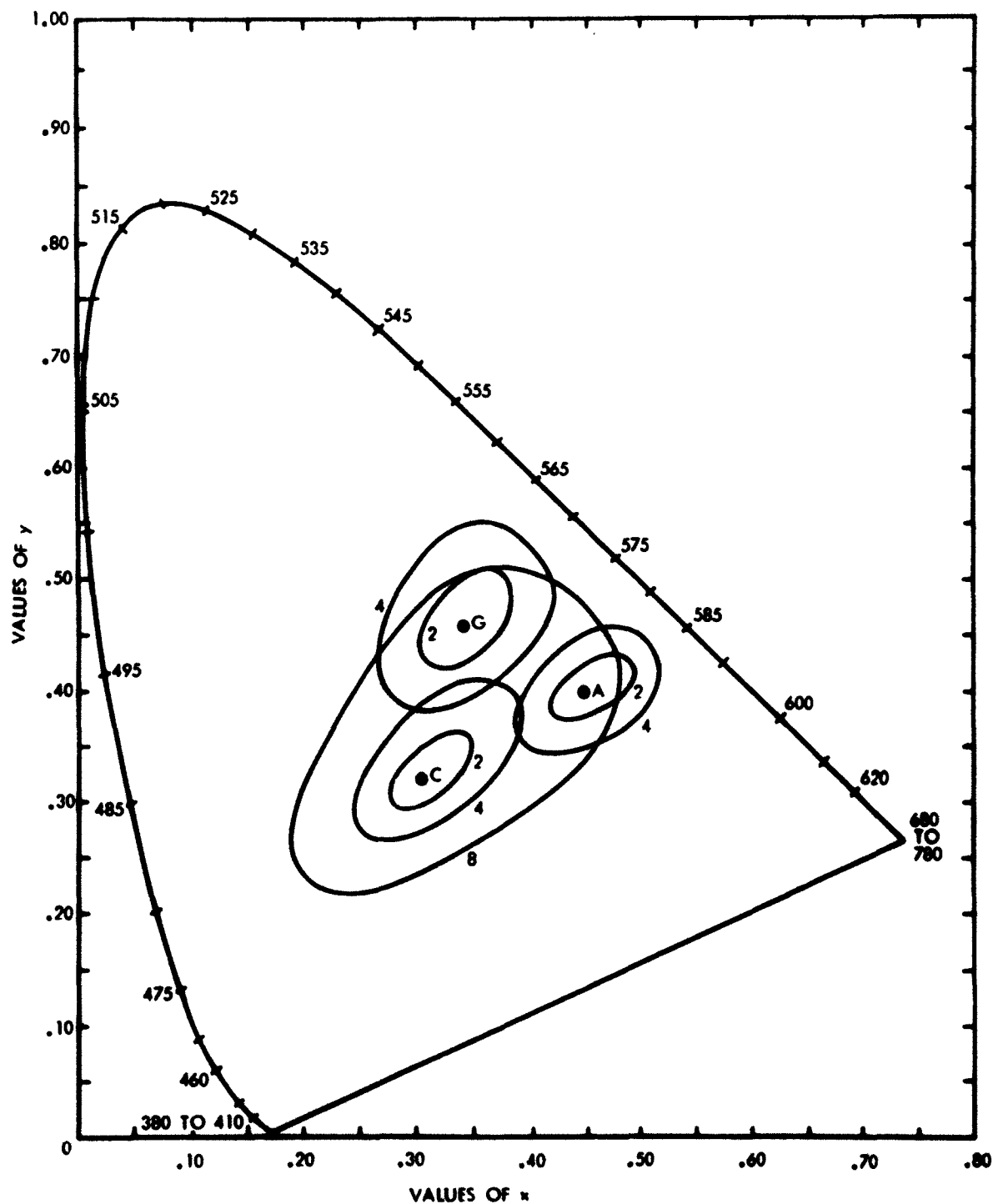


Figure 10. Contours of Constant Munsell Chroma Showing the Effect of Transformation from Illuminant C to Other Illuminants Which Correspond to C in Figure 10, (From Transformation Relation by Burnham, et.al.)

insignificant since it is rather small (in the transformation by Burnham, et al, $\xi \approx .0020$, $\eta \approx .0010$, $\zeta \approx .0025$). However, they lead to large qualitative effects in certain special cases. To see this, consider an image generated by two wavelengths, say, 548 m μ and 627 m μ . All the samples of the image will be on the XOY plane, and the samples exhibit all hues, since now they can be arranged circularly around the achromatic point P, as shown in Figure 11.

Sylvania has performed color matching experiments to evaluate the color fidelity achieved by two-color projections. An array of Munsell chips was photographed on black-and-white film through various filters, and pairs of the resultant slides were projected on the screen through various filters. The observed colors were matched to standard Munsell chips in a viewing box, illuminated with C.I.E. standard illuminant C. Figures 12-17 show the results achieved by a sample of this data.

For the data chosen, the Munsell chips were photographed through green and red filters, Wratten Nos. 11 and 29. The projector used a Sylvania DDB 750 watt lamp. Two projections are considered:

Normal Projection: The slides taken through the green and red filters are projected back through the same filters.

Reverse Projection: The green slide is projected through the red filter, and the red slide is projected without a filter.

Figures 12-14 show the results of the normal projection for three subjects, and Figures 15-17 show the results of the reverse projection for the same three subjects.

Figure 12 shows the results of the color matching for Subject 1 for normal projection. The outer contour shows the Munsell contour for value 5, chroma 8. On this contour are shown points 1, 6, 8, 9, 5, 11 which represent the 6 sample chips to be considered in this discussion. When these chips were photographed and projected in a two-color projection, the resultant projections appeared to have the colors shown by the inner contour. This inner contour

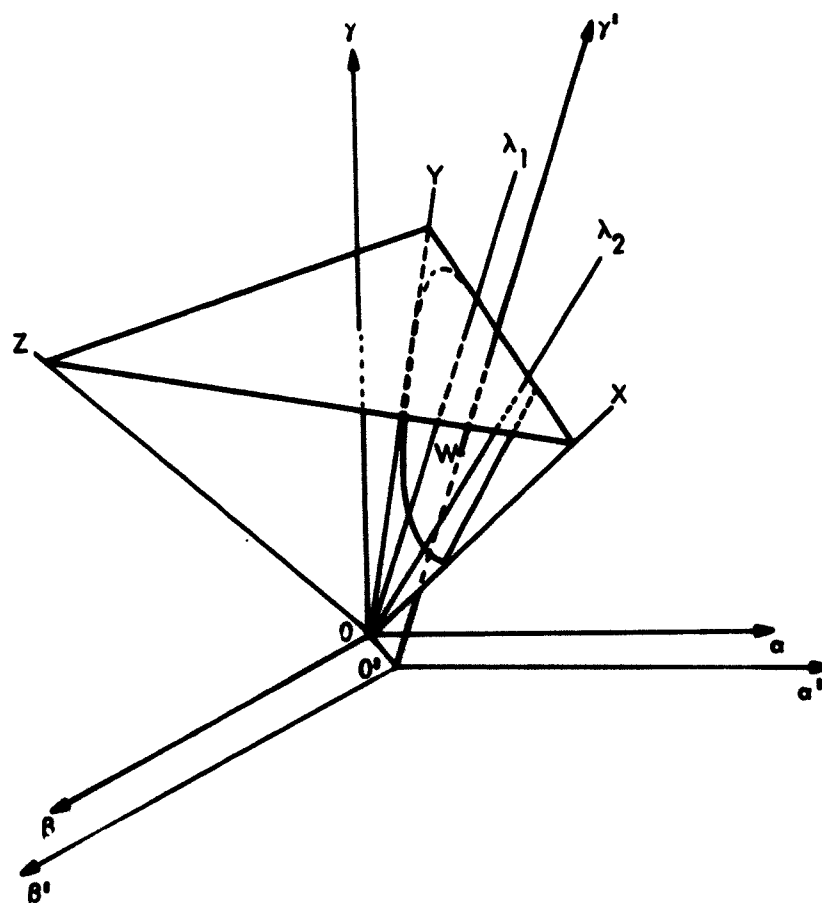


Figure 11. Showing the Transformation in a Two-Color Projection. The New Axis y' Cuts the XOY Plane at W Due to Shift from O to O' of the Origin

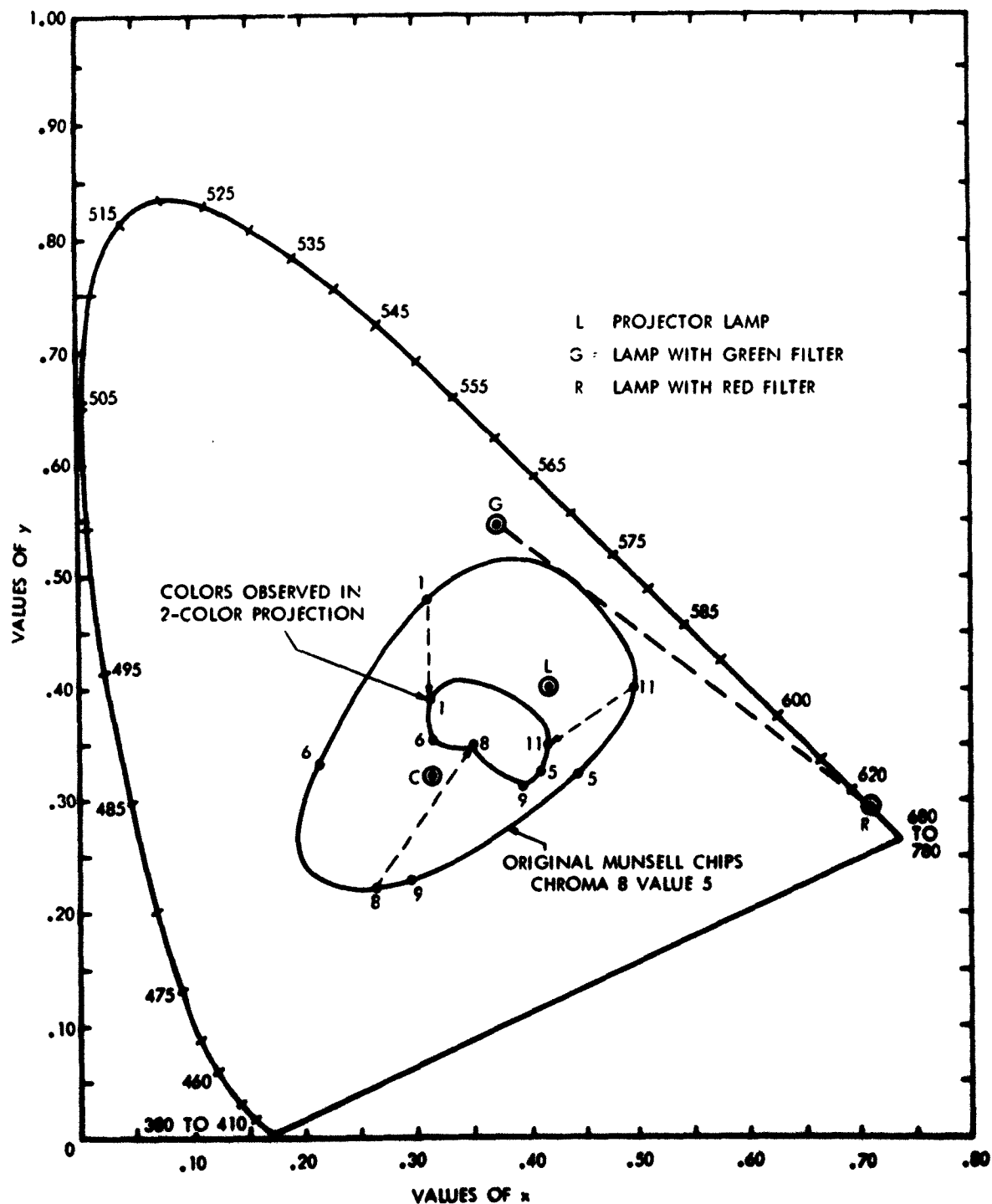


Figure 12. Colors Observed by Subject (I), Normal Projection with Green and Red Filters (Written 11 and 29 with Sylvania DD8 750 W Lamp)

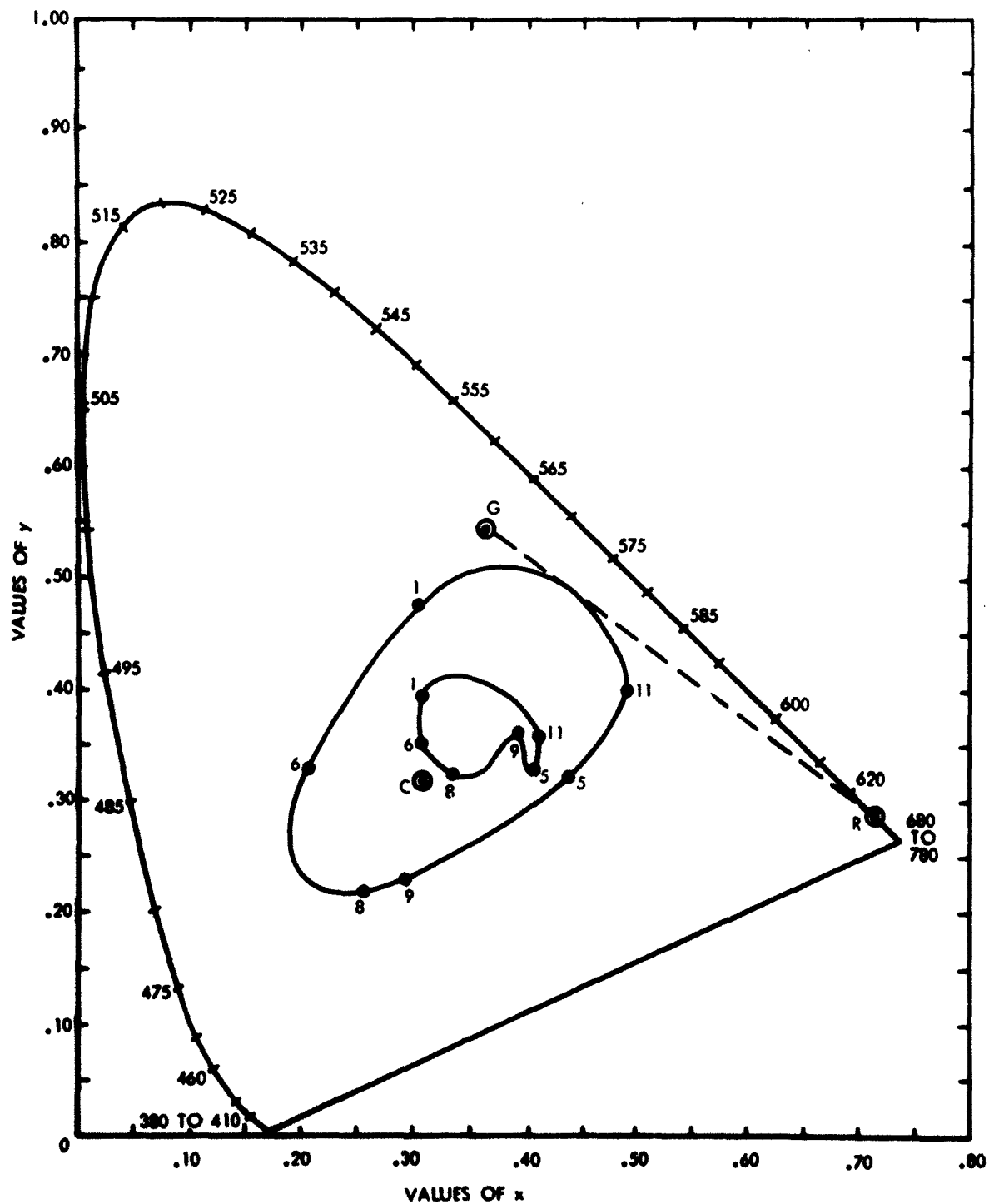


Figure 13. Colors Observed by Subject (2), Normal Projection



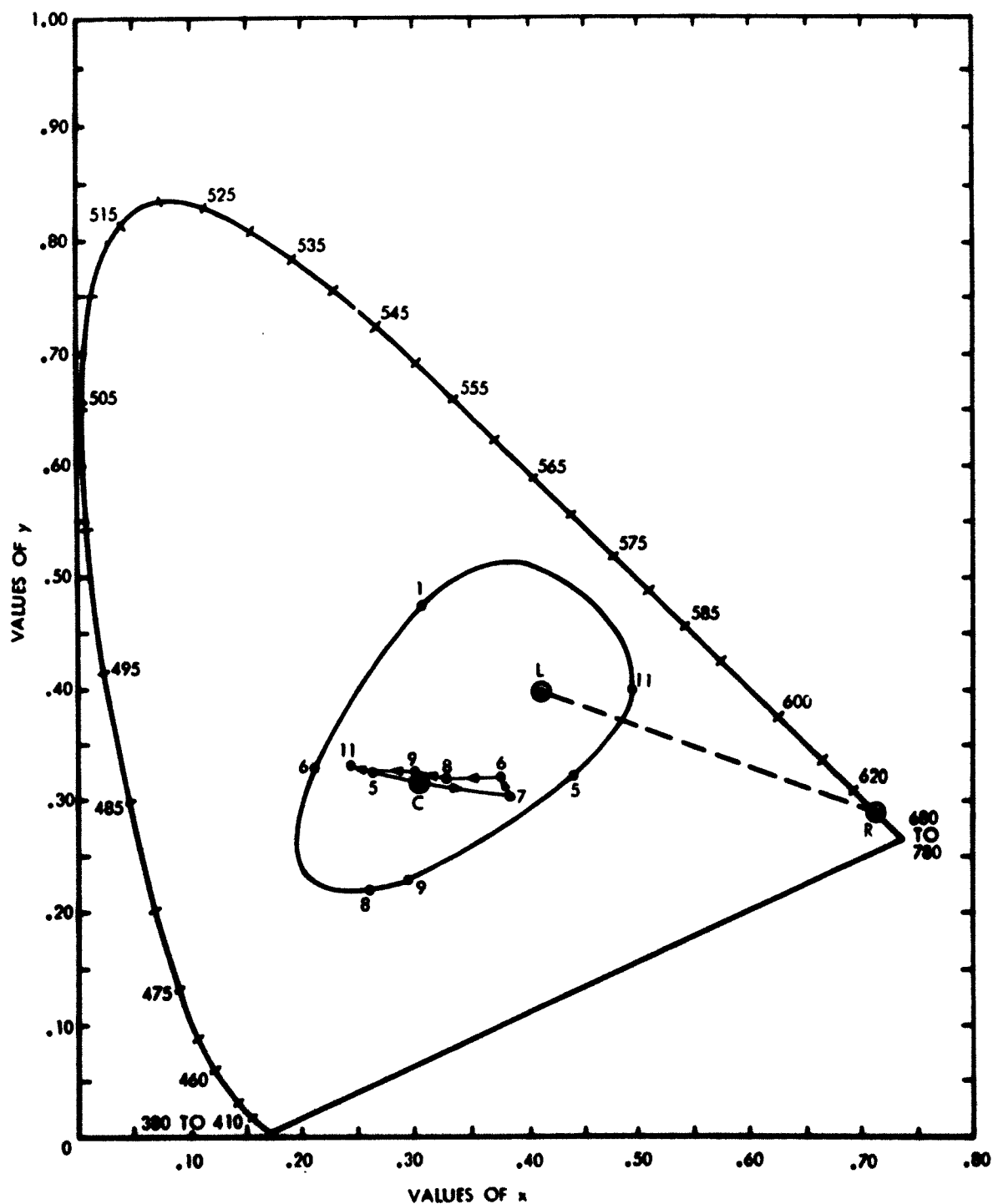


Figure 15. Colors Observed by Subject (1), Reverse Projection (Red Filter Over Green Slide, No Filter Over Red Slide)

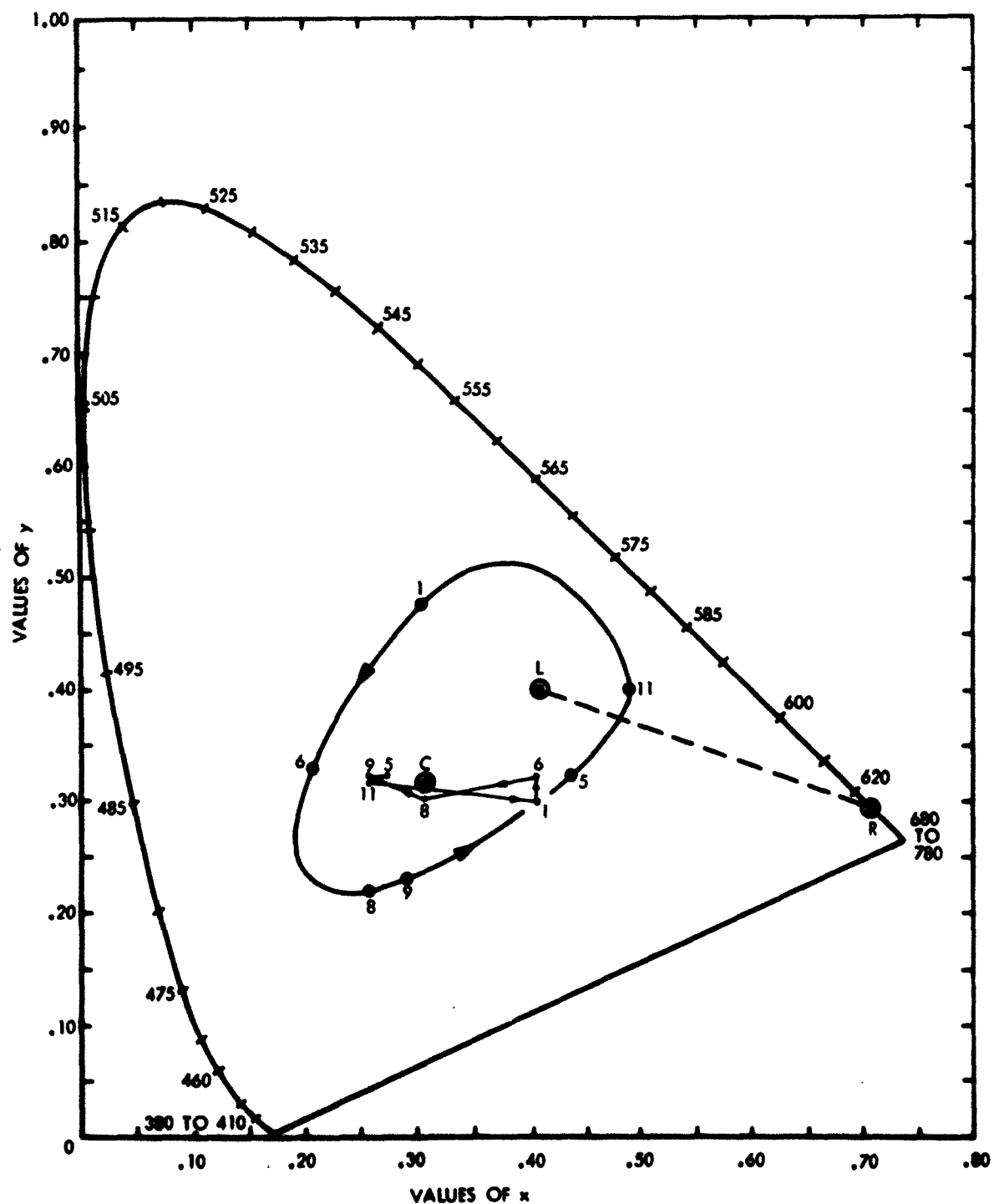


Figure 16. Colors Observed by Subject (2), Reverse Projection

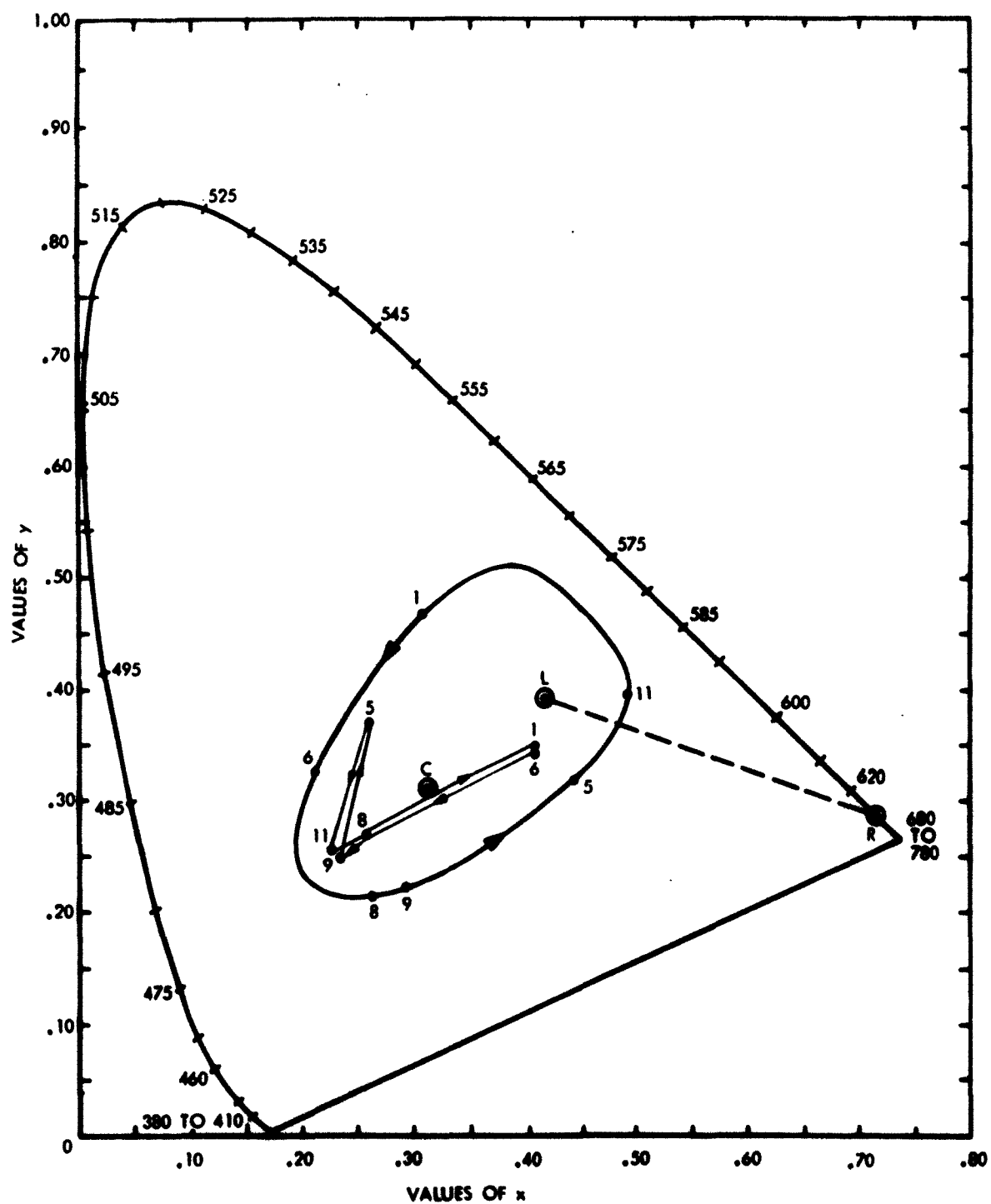


Figure 17. Colors Observed by Subject (3), Reverse Projection

gives the trichromatic values of the Munsell chips in the viewing box that were matched to the projected pictures of the chips. The dashed arrows show the shifts of the original Munsell colors to the colors observed in the two-color projection.

Figure 12 shows, as point C, the trichromatic values for C.I.E. standard illuminant C. This represents the white reference point for the two contours, since they are both related to illuminant C. The figure also shows as points L, G, and R the trichromatic values for the projection lamp alone, and the projection lamp with green and red filters, respectively.

Classical concepts of color transformations would indicate that the observed colors should lie on a straight line parallel to the dashed line between G and R. However, due to the "Land effect" an ellipse is formed, although there is contraction perpendicular to the R-G line. This effect, as well as the disaturation of the colors, is consistent with the Yilmaz theory.

Figures 13-14 show the results of two other observers for the same experiment as Figure 12. As shown in Figure 13 Subject (2) is consistent with Subject (1) and has an even fuller range of color (i.e., less contraction perpendicular to the R-G line). However, the results of Subject (3) (Figure 14) are very erratic, and inconsistent with the results of the other two subjects. It should also be noted that they lie on the opposite side of illuminant C.

(It is interesting to note that Subject (3) was a very conscientious observer, and could consistently make perfect or near perfect scores in identifying from memory 52 Munsell chips. The reasons for the discrepancy in the data between his values and those of Subjects (1) and (2) are therefore not apparent.)

Figure 15 shows the colors matched by Subject (1) when the green slide is projected through the red filter and the red slide through no filter. This result is in agreement with the classical concept and

is consistent with the Yilmaz theory. The data forms a straight line essentially parallel to the line L-R between the projection chromaticity points of the two projection lights. Because of the reversal of the slides, there is a reversal of the points between the inner and outer contours (e.g., points 6 and 11 on the inner contour lie opposite the corresponding points on the outer contour). To clarify the transformation mapping, the arrows on the inner contour show the direction corresponding to counter-clockwise rotation on the outer contour.

Figures 16 through 17 show the reverse-projection color matches for Subjects (2) and (3) for the same conditions as that for Subject (1) shown in Figure 6. Again it should be noted that Subject (2) is consistent with Subject (1), whereas Subject (3) varies markedly.

4.3 NARROW BAND

As in the case of the broad band data, the narrow band data indicate that the degree of fidelity attainable with a two-component color system is far inferior to the fidelity of a three-component system with respect to both the hue and saturation. Approximately 25% of the narrow band filter combinations and conditions of ambient illumination resulted in a full range of perceived colors, although the saturations in general were lower than those of the stimulus material. It can be seen from the narrow band data in Appendix C, however, that careful attention to density combinations can result in a full range of hues and relatively high saturation levels. To illustrate this, Table 16 presents the densities of the short and long records which produce each of the major colors at the greatest value of excitation purity obtained.

Table 16. The Optical Densities of Short and Long Records Which Produced Each of the Five Major Colors.

OPTICAL DENSITY

<u>Short Record</u>	<u>Long Record</u>	<u>Hue</u>	<u>P_e</u>
1.08	0.79	Red (595mμ)	54
1.62	1.25	Green (551mμ)	31
1.48	1.35	Yellow (575mμ)	61
1.20	1.32	Blue (455mμ)	24
0.79	0.75	Purple (538c mμ)	32
0.52	0.44	Purple (561c mμ)	24

In addition to the hues indicated, intermediates such as blue-green, green-yellow, etc., were also obtained.

As was done with the broad band data, possible explanations based upon the law of intermediates and simultaneous contrast are presented in Table 15. Unlike the broad band data, however, these principles, while they explain more than 90% of the hues, fail to explain about 5%.

The results of this study, then, indicate that two-component color systems are acceptable for color displays, particularly when high saturations are not necessary.

SECTION 5

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APPENDIX A

TRISTIMULUS VALUES FOR PROJECTION LAMP AND COLORED FILTERS

	X	Y	Z
1. Lamp alone (Sylvania DDB 750w)	574.12	547.70	256.86
2. Lamp plus broadband filters			
47B	11.55	1.51	57.53
11	140.13	206.78	34.15
29	135.70	55.80	0.01
3. Lamp plus narrowband filters			
CS 5-74	36.15	3.58	187.08
CS 4-104	1.69	10.06	19.21
CS 4-105	40.19	229.97	66.22
W-73	97.76	108.04	0.26
CS 2-78	136.99	55.23	0.00
W-70	7.16	2.61	0.00

4. Tristimulus Values for Bulbs which Provided Ambient Illumination

Lamp	Volts	X	Y	Z
Soft White	120	1236.6	1114.5	353.9
Yellow	120	1117.5	582.2	0.0
Red	120	341.8	137.1	0.0
Green	120	286.0	536.2	340.0

APPENDIX B

PREPARATION OF NARROW-BAND SLIDES

B.1 INTRODUCTION

It was desired to prepare six positive projection slides, each of which corresponded to the view through a different "narrow-band" filter of the same scene. The scene consisted of a fixed array of eleven Munsell color chips chosen in a roughly random fashion from the Munsell color book. The principle characteristic desired in each slide was this: that when the slide was uniformly illuminated, the ratio of the amounts of light transmitted through the images of the various chips would be the same as the ratios of the amounts of light originally reflected from those chips and passed through a narrow-band filter at the time the scene was photographed. The reduction of this simply-stated desire to the existing set of slides involved careful consideration of the nature of filters, illuminants, photo-sensitive emulsions, the development process, and densitometry, and furthermore, the use of many cut and dry methods. Some of these matters are discussed in brief below.

B.2 FILTERS

The six filters employed in photographing the Munsell chips are listed below. For each of the first five filters the value is also given of: its peak transmittance ($T_{\max}$), the wavelength of peak transmittance ($\lambda_{\max}$), and the width of its transmittance between wavelengths at which its transmittance was equal to $1/2 T_{\max}(\Delta\lambda_{1/2})$.

The sixth filter was not truly narrow-band at all. However, among the readily available glass or gelatin filters it was not possible to find one with narrow-band transmittance in the desired far red region of the spectrum ($\sim 670 \text{ m}\mu$). The actual characteristic of the compromise filter is that its transmittance rises from 10% at $660 \text{ m}\mu$ to 80% at $700 \text{ m}\mu$. Information on its transmittance curve at wavelengths greater than $700 \text{ m}\mu$ is not available.

TABLE B-1

Filter #	Type*	$T_{\max}$ (in %)	$\lambda_{\max}$ (in mμ)	$\Delta\lambda_{1/2}$ (in mμ)
1	*CS 5-74	15	430	40
2	*CS 4-104	7	485	30
3	*CS 4-105	11	515	40
4	W-73	9	575	35
5	*CS 2-78	17	640	55
6	W-70	~80	>700	>100

The four filters marked with an asterisk () are products of Corning Glassworks. The other two are products of Eastman Kodak.

However, an effective value of its upper wavelength of transmittance is set by a combination of factors, including:

- (a) Sharp decrease in sensitivity of the emulsion at long wavelengths (~ 870 mμ).
- (b) Declining transmittance of optical elements at long wavelengths.
- (c) Decreasing emission of light source at long wavelengths.

The values listed for this filter under the headings $\lambda_{\max}$, $T_{\max}$, and $\Delta\lambda_{1/2}$ are merely rough estimates based on these considerations.

B.3 ILLUMINANT

The characteristics desired for the illuminating source used in photographing the color chips were as follows:

- (1) It should give a steady illumination over the several hour period required to make all six exposures.
- (2) It should illuminate all chips as uniformly as practicable.

- (3) Preferably, its spectrum should approximate that of a C-source (where all the filters of arbitrarily narrow bandwidth, the spectrum of the illuminant would be immaterial to the attainment of the correct ratio of chip-densities on any one slide. With the moderate bandwidths of the filters used, however, the relative chip densities of a given slide would vary somewhat with the spectrum. It was therefore decided to use an approximation to the most common of the standard colorimetric illuminants - the C-source.)

These requirements were met to a satisfactory degree by constructing an almost totally enclosed lamp housing supplied with forced air cooling. In order to prevent stray reflections from colored surfaces (which would have altered the uniformity and spectrum of the illuminant), the size of the exit aperture was chosen to produce a beam of width just sufficient to illuminate the scene. To further reduce secondary reflections, nearby walls and bench surfaces were covered with a dull, black cloth. The distance from lamp to scene was chosen sufficiently large to produce illumination uniform to within a few percent.

The flat tungsten ribbon of the projection lamp was supplied with current through an ammeter which was periodically monitored. The current was adjusted to produce such a color temperature of the emitted light that, when the light was passed through an available color-correcting filter, a C source would be approximated.

B.4 PHOTOGRAPHIC PROCESS

When a photographic emulsion is exposed in a camera to a scene consisting of areas of different brightness, it is found upon development that the optical density of each area of the resulting negative varies with the corresponding brightness as indicated in Figure B-1.

The density is defined as the negative logarithm to the base 10 of the fraction of light transmitted by the negative. ($D = -\log_{10} T$). Between the point a, slightly above the threshold, and the point b,

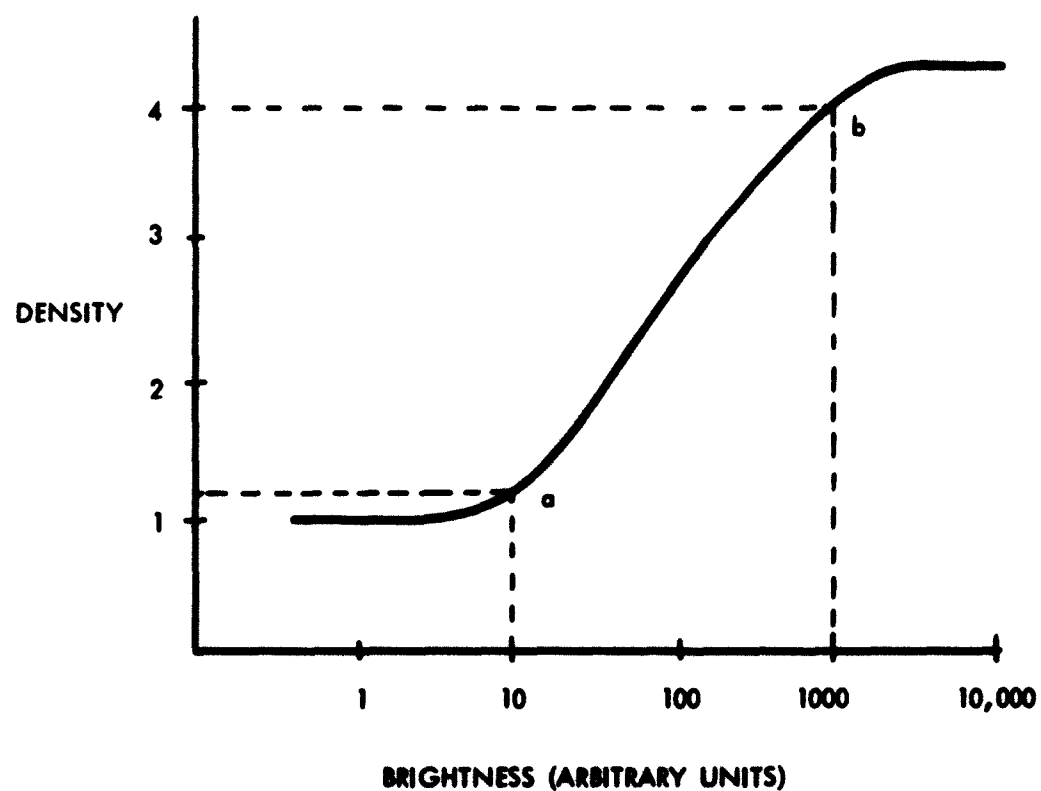


Figure B-1. Photographic Sensitometric Curve Showing Dependence of Image Density on Object Brightness

slightly below saturation, the curve of Figure B-1 can be represented with fair accuracy by a straight line of slope, γ .

$$\frac{dD}{d(\log B)} = \gamma : D_a < D < D_b$$

In this linear region of the films characteristic curve, the density is thus given by

$$D = D_a + \gamma \log_{10}(B/B_a)$$

and hence the transmission is given by

$$T = T_a (B/B_a)^{-\gamma}$$

If the negative be uniformly illuminated, the light transmitted is given by

$$I = I_a (B/B_a)^{-\gamma}$$

If the negative is printed on a second piece of film, (using such an exposure that the linear portions of the characteristic curves of the two films "overlap"), then development will yield a positive whose transmittance is given by

$$T'/T_a = (B/B_a)^{\gamma\gamma'}$$

where γ' is the contrast (gamma) of the positive. If the positive is projected on a viewing screen, the observed brightnesses of various areas are given by

$$I'/I_a = (B/B_a)^{\gamma\gamma'}$$

From an examination of this equation, it is apparent that, even though linear characteristic curves are assumed, the brightness

of images on the screen is generally not a linear function of the brightness of corresponding objects in the photographed scene. That linear relationship, which is the one desired, occurs only when the product of the negative's contrast (γ) and of the positive's contrast (γ') is unity:

$$\gamma\gamma' = 1 .$$

Much of the time consumed in preparing the slides was directed toward achieving the value of $\gamma\gamma' = 1$.

B.5 EXPERIMENTAL PROCEDURE

The value of gamma (γ) achieved on a particular sheet of film depends critically on all of the following factors:

- (1) Nominal film type.
- (2) Batch number of the manufacturing run.
- (3) Age and other influences (e.g., humidity) which have affected the film since manufacture.
- (4) Type and condition of developer.
- (5) Developer temperature.
- (6) Amount of agitation used during development.
- (7) Time of development.
- (8) Time of exposure.
- (9) Wavelength of light used for exposure.

Data available from manufacturers about how the gamma of a given film depends on all these factors is necessarily approximate, though useful as a guide. For the present work the procedure followed was to fix as many factors as was practical and calibrate the films against the remaining variables. In particular, the factors 1 through 6 were fixed, while 7, 8, and 9 were variable. This meant that the effect of development time and exposure time on contrast had to be explored for each of the six filters.

The film selected for use with filters 1 through 5 was Kodak Super XX. Unfortunately the sensitivity of this panchromatic emulsion falls off precipitously in the wavelength region in which filter 6 has appreciable transmission, so it was necessary to substitute Kodak Infra-Red Film for use with this filter. The basis for choosing these films were:

- (1) Wavelength regions of sensitivity.
- (2) Linearity of the region between points a and b on their sensitometric curves (see Figure B-1).
- (3) Length of region between a and b. (This amounted to about two decades, i.e., a factor of 100 in illumination for Super XX, and about one and a half decades for the Infra-Red film, i.e., a factor of 30 in illumination.

Following a preliminary calibration procedure for the two emulsions with appropriate filters, values of exposure time were selected such that a γ of unity would be approximated on each negative. Values of exposure time were selected which would place the density of the image of the white chip comfortably below the saturation point, b, on the sensitometric curve. A grey scale was included in the scene, so that by measuring its image on each negative with a densitometer it was possible to determine the value of γ achieved. Densitometric readings also allowed a check of individual chips to insure that the density of each lay within the linear region a to b. (Figure B-1.)

Finally, densitometry of the background of the chips revealed a residual lack of uniformity in the illumination of the scene. To eliminate this effect, correcting masks were prepared by photographing a blank white sheet of cardboard (with no chips mounted on it) under the same conditions of illumination used for photographing the mounted chips. Positives were made from these negatives and superposed on the negatives of the chips. These compound films were then contact-printed on Super XX, the development time being chosen to give $\gamma' = 1/r$ in each case, while the exposure time was selected to make the density of the white chip as small

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as possible without departing from the film's linear region. The value of $\gamma\gamma'$ was checked by densitometric readings of the grey scale on each positive. The values of $\gamma\gamma'$ achieved are listed in Table B-2 along with the density of the white chip's image.

TABLE B-2

Filter #	Filter Type	$\gamma\gamma'$	Density of White Chip
1	CS 5-74	0.97	0.43
2	CS 4-104	1.03	0.45
3	CS 4-105	1.00	0.64
4	W-73	1.00	0.62
5	CS 2-78	0.97	0.35
6	W-70	1.03	0.55

The positives so prepared were trimmed and mounted in 35 mm slide binders. Care was taken to have the same orientation between subject matter and binder in each case, so that a minimum amount of adjustment of the two projectors would be needed to secure registration of any two slides on the viewing screen.

APPENDIX C

RAW DATA

C.1 BROADBAND

Table / Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair /

STIMULUS NUMBER

CHIP	Subj	STIMULUS NUMBER																				Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ^{10}	Pe	λ	Pe
ABSOLUTE JUDGMENT RESPONSE		551		551	61	486	47	64	37	43	36	485	33	526	31	507	27			551	70		
	JG	551	10	525	48	551	18	551	10	583	10	455	8	455	8	551	10	551	5	551	33		
	JG	551	10	525	48	551	18	551	10	583	10	455	8	455	8	551	10	551	5	551	33		
	WM	525	18	525	48	455	18	525	18	486	7	455	26	486	25	525	11	525	18				
	WM	525	18	525	48	455	18	525	11	525	7	455	137	455	137	525	15	525	11	486	5		
	MC	525	48	525	48	455	18	525	30	525	18	455	26	455	18	525	48	525	30	412	25		
	MC	525	48	525	48	455	18	525	30	525	18	455	26	455	18	525	48	525	30	412	25		
	MC	525	48	525	48	455	18	525	30	525	18	455	26	455	18	525	48	525	30	412	25		
	MC	525	48	525	48	455	18	525	30	525	18	455	26	455	18	525	48	525	30	412	25		
	MC	525	48	525	48	455	18	525	30	525	18	455	26	455	18	525	48	525	30	412	25		
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WM	551	26	525	48	455	18	551	5	525	18	455	26	455	33	525	11	525	47	525	5		
	WM	525	32	525	61	525	11	486	7	455	33	455	26	525	11	525	11	525	32	525	26		
	MC	525	61	525	61	525	32	525	48	525	48	487	37	426	5	525	47	525	61	525	32		
	MC	525	61	525	61	525	32	525	48	525	48	455	33	455	18	525	61	525	61	525	32		
	VC	525	31	525	30	476	4	551	5	587	8	455	26	455	18	551	551	551	31				
	VC	551	31	525	17	455	8	551	20	487	8	455	33	455	18	551	5	551	31				
	WM	551	26	525	61	455	8	551	16	525	11	455	26	455	18	525	18	525	26				
	WM	525	17	525	48	455	8	551	17	587	8	455	26	455	18	525	18	525	26				
	MC	525	48	525	48	455	18	525	18	525	18	455	33	455	18	525	48	525	48				
	MC	525	48	525	48	455	18	525	18	525	18	455	33	455	18	525	48	525	48				
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	VC	551	26	525	48	455	18	525	18	525	18	455	33	455	18	525	18	525	32				
	VC	525	32	525	61	455	4	455	5	525	18	455	26	455	18	525	18	525	32				

Table 2 Wavelength (λ) and Excitation Purity (Po) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 2

CHIP	Subj	STIMULUS NUMBER																				Background	
		λ^1	Po	λ^2	Po	λ^3	Po	λ^4	Po	λ^5	Po	λ^6	Po	λ^7	Po	λ^8	Po	λ^9	Po	λ	Po		
ABSOLUTE JUDGMENT RESPONSE		551	40	575			61	486			37	492	36	553	33	566	31	499	57	587	68	444	72
	JG	612	9	612	46	455	4	612	4	496	44	455	8	455	8	455	8	612	9	612	4	496	60
	JG	612	9	612	46	455	8	496	30	496	30	455	8	455	8	455	8	612	9	612	4	496	60
	WM	587	8	612	46	455	8	587	18	587	8	455	8	455	8	455	4	612	4	612	4	496	38
	WM	612	18	612	46	455	13	612	18	612	9	496	23	455	18	612	18	612	18	612	28	566	31
	MC	612	18	612	25	455	8	587	18	612	9	496	23	455	8	612	18	612	18	612	9	496	15
	MC	496	22	595	54	455	18	496	22	496	8	496	25	496	25	496	25	496	25	496	18	496	22
	VC	612	18	612	25	455	15	612	18	612	18	455	18	455	18	455	18	455	18	455	18	455	18
	VC	612	18	612	37	455	18	566	17	566	24	455	26	455	26	455	18	612	18	612	28	496	15
	WM	612	28	612	37	455	13	455	18	455	15	455	26	455	26	612	18	612	18	612	28	496	15
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	MC	612	37	595	54	455	37	496	30	496	30	455	33	455	33	612	37	612	37	612	37	566	31
	MC	612	37	595	54	455	33	496	30	496	18	455	33	455	33	455	26	496	30	496	30	566	31
	VC	587	68	612	37	566	24	587	35	612	9	455	26	455	26	455	18	612	18	587	53	444	72
	VC	587	68	612	37	566	8	587	35	612	18	455	26	455	26	455	18	612	18	587	53	444	72
	WM	612	18	612	37	612	9	612	28	612	12	455	26	455	26	455	18	612	18	612	28	496	30
	WM	612	28	612	37	496	13	496	15	496	15	455	26	455	26	455	18	612	18	612	28	496	30
	MC	496	30	612	37	496	37	496	15	496	15	455	26	455	26	455	18	612	18	612	28	496	30
	MC	612	37	595	54	455	37	496	15	496	15	455	26	455	26	455	18	612	18	612	28	496	30
	VC	496	30	595	54	455	37	496	15	496	15	455	26	455	26	455	18	612	18	612	28	496	30
	VC	496	30	595	54	455	37	496	15	496	15	455	26	455	26	455	18	612	18	612	28	496	30
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT		587	68	595	54	566	17	496	15	496	15	455	26	455	26	455	18	612	18	587	53	444	72
	JG	612	9	612	46	455	4	612	4	496	44	455	8	455	8	455	8	612	9	612	4	496	60
	JG	612	9	612	46	455	8	496	30	496	30	455	8	455	8	455	8	612	9	612	4	496	60
	WM	587	8	612	46	455	8	587	18	587	8	455	8	455	8	455	4	612	4	612	4	496	38
	WM	612	18	612	46	455	13	612	18	612	9	496	23	455	18	612	18	612	18	612	28	566	31
	MC	612	18	612	25	455	8	587	18	612	9	496	23	455	8	612	18	612	18	612	9	496	15
	MC	496	22	595	54	455	18	496	22	496	8	496	25	496	25	496	25	496	25	496	18	496	22
	VC	612	18	612	25	455	15	612	18	612	18	455	18	455	18	455	18	455	18	455	18	455	18
	WM	612	18	612	37	455	18	566	17	566	24	455	26	455	26	455	18	612	18	612	28	496	15
	WM	612	28	612	37	455	13	455	18	455	15	455	26	455	26	612	18	612	18	612	28	496	15

Table 3 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 1 and Projection Pair 3

CHIP	Subj	STIMULUS NUMBER																				Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ	Pe		
		537	40	575	61	486	47	612	37	492	36	455	33	526	31	499	27	587	68	447	70		
ABSOLUTE JUDGMENT RESPONSE	JG	587	10	575	48	546	4	681	5	581	5	485	8	455	4	526	8	551	10	455	70		
	JG	581	10	575	48	455	8	681	10	587	8	455	8	455	8	551	5	551	10	455	70		
	WM	575	18	575	30	455	4	575	11	575	11	455	18	455	8	575	18	575	18	447	70		
	WM	575	18	575	30	486	13	575	11	575	11	486	35	486	13	575	18	575	30	455	8		
	NC	575	18	575	30	486	13	575	18	575	18	455	8	455	13	575	30	575	30	486	13		
	NC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	VC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	VC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	NC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	NC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	VC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	VC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	NC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	NC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	VC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	VC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	NC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	NC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	VC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	VC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		
	WM	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37		

Table 4 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 4

Chip	Subj	STIMULUS NUMBER																				Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ^{10}	Pe	λ^{11}	Pe
ABSOLUTE JUDGMENT RESPONSES		557	60	575	61	588	67	602	67	612	67	625	67	635	67	645	67	655	67	665	67	675	67
	30	575	6	612	37	645	6	675	12	687	18	694	9	709	6	725	6	735	6	745	6	755	6
	30	575	12	612	46	637	18	675	18	687	18	694	20	709	20	725	13	735	13	745	13	755	13
	40	612	18	645	87	675	35	694	9	709	4	725	5	735	5	745	2	755	18	765	18	775	18
	40	612	18	645	96	675	20	694	9	709	18	725	15	735	15	745	5	755	18	765	18	775	18
	40	612	18	645	97	675	9	694	9	709	4	725	4	735	18	745	3	755	18	765	18	775	18
	40	612	37	645	87	675	6	694	18	709	18	725	18	735	18	745	9	755	18	765	18	775	18
	40	612	37	645	87	675	6	694	18	709	18	725	18	735	18	745	9	755	18	765	18	775	18
	40	612	37	645	87	675	6	694	18	709	18	725	18	735	18	745	9	755	18	765	18	775	18
	40	612	37	645	87	675	6	694	18	709	18	725	18	735	18	745	9	755	18	765	18	775	18
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18
	40	612	18	645	97	675	10	694	18	709	18	725	18	735	18	745	13	755	18	765	18	775	18

Table 5 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 5

STIMULUS NUMBER

CHIP	Subj	STIMULUS NUMBER																		Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ	Pe
ABSOLUTE JUDGEMENT RESPONSE		557	40	525	61	486	47	612	37	492	36	453	33	586	51	599	37	587	68	612	68
	JG	587	8	54	2	557	10	587	8	557	5	557	10	557	5	595	6	54	2	557	88
	JG	587	P	512	K	557	10	595	6	557	5	557	10	557	10	595	6	612	4	557	81
	WM	612	4	612	9	526	8	612	4	612	4	526	58	526	18	612	4	612	4	526	17
	WM	612	4	498	5	54	5	54	2	54	2	54	9	54	5	612	4	612	4	612	4
	MC	612	9	526	17	499	6	587	8	587	18	499	3	499	6	526	8	526	17	525	18
	MC	612	18	612	9	499	6	498	7	587	8	557	10	557	5	595	6	526	8	526	32
	VC	557	4	612	3	526	3	526	3	526	3	526	3	526	3	526	3	526	3	526	3
	VC	557	4	453	18	526	3	453	18	526	3	453	18	526	3	453	18	526	3	453	18
	WM	612	9	498	15	557	10	498	5	587	8	498	3	557	10	612	9	498	5	557	10
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WM	612	9	498	15	557	10	612	9	612	9	557	10	557	20	612	9	612	9	557	20
	MC	526	17	526	15	557	10	526	8	498	5	557	10	557	10	612	9	526	17	526	32
	MC	498	5	526	17	557	10	526	4	587	18	557	10	557	10	587	18	526	17	572	17
	VC	526	17	526	31	557	10	612	9	587	18	557	10	557	10	587	18	526	17	526	17
	VC	526	8	526	31	492	9	587	8	612	4	492	6	526	6	587	18	526	5	612	4
	WM	587	1	526	17	557	10	498	4	587	8	557	10	557	10	612	4	612	9	557	10
	WM	498	5	526	17	453	18	498	4	526	11	557	10	557	10	526	8	498	5	575	11
	MC	526	34	526	18	557	10	526	24	498	5	557	10	557	10	526	31	526	31	557	31
	MC	492	3	526	17	557	10	526	17	526	17	557	10	557	10	526	31	526	31	572	47
	VC	587	35	526	31	587	18	612	9	498	5	557	20	499	3	612	9	526	17	612	4
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	VC	498	5	526	24	557	10	526	11	526	18	557	20	499	3	612	9	587	35	612	4

Table 6 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 6

CHIP	Subj	STIMULUS NUMBER																Background λ	Pe
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
ABSOLUTE JUDGMENT RESPONSE		557	46	575	61	486	47	612	37	492	36	455	33	586	31	499	27	582	68
	JG																		
	JG	498	12	488	23	595	12	499	3	612	7	612	18	595	12	492	3	574	2
	JG	498	12	492	9	595	12	508	6	595	6	612	18	612	9	499	3	499	6
	WN	492	3	492	18	498	15	498	7	556	4	612	58	612	9	498	13	498	25
	WN	514	2	499	13	612	18	574	3	612	7	612	38	612	18	574	5	574	9
	MC	492	9	499	13	566	8	496	25	492	9	566	17	587	18	492	3	496	13
	MC	492	9	499	13	612	18	496	7	577	18	612	37	612	18	492	9	496	7
	VC	498	6	498	13	598	15	496	7	582	8	612	37	582	32	592	9	582	9
	VC	492	9	499	13	598	15	499	6	577	18	612	37	612	32	592	13	574	9
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WN	492	9	492	9	612	18	499	6	566	8	612	37	612	32	492	3	492	9
	WN	492	9	492	18	612	18	551	5	612	9	612	38	612	28	499	3	499	6
	MC	496	25	492	27	498	15	496	13	566	8	612	37	498	30	566	8	496	13
	MC	499	6	492	9	612	28	455	8	577	18	612	37	498	22	498	13	496	13
	VC	492	18	499	27	612	18	496	13	498	5	612	37	498	30	587	8	496	7
	VC	492	9	499	27	612	18	496	7	587	18	612	37	612	28	587	8	499	6
	WN	499	5	499	13	612	18	551	5	587	8	612	37	612	37	587	5	499	6
	WN	499	5	492	27	612	18	499	3	612	9	612	37	612	28	499	3	499	6
	MC	496	37	492	18	566	31	496	13	498	5	612	37	498	22	496	13	492	27
	MC	496	7	495	46	498	23	498	18	566	24	498	18	498	23	498	18	495	26
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	VC	551	5	499	20	612	18	587	8	612	9	612	37	612	32	498	13	499	3
	VC	492	9	492	27	612	18	498	7	612	9	612	38	498	15	498	13	492	9

Table 7 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broed Band Slide Pair 1 and Projection Pair 7

CHIP	Subj	STIMULUS NUMBER																				
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background		
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	
ABSOLUTE JUDGMENT RESPONSE		557	40	578	61	486	47	412	37	442	36	455	33	526	31	449	27	587	68	644	72	
	JG	445	4	445	33	578	6	455	4	566	4	587	18	566	8	446	7	442	7	526	70	
	JG	446	13	455	33	578	6	441	7	455	4	587	1	587	1	455	8	44	7	442	74	
	WN	446	18	455	26	587	1	446	2	455	4	578	11	578	11	455	18	442	10	455	8	
	WN	446	35	446	37	587	18	446	13	445	8	578	30	578	11	446	30	455	37	455	18	
	MC	446	7	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	MC	446	13	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WN	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	WN	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	MC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	MC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WN	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	WN	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	MC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	MC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	
	VC	446	37	446	37	578	30	566	4	566	8	578	30	578	30	446	7	446	13	578	11	

Table 8 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 8

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background	Pe
CHIP		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ	Pe
ABSOLUTE JUDGEMENT RESPONSE		557	40	575	61	486	47	415	57	472	36	453	33	516	31	499	27	577	68	464	72
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	JG	557	5	551	5	575	6	499	3	472	3	575	6	575	6	526	8	526	8	551	76
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	JG	514	2	507	20	575	6	551	5	551	5	507	14	507	14	557	10	514	5	551	76
	WM	514	2	514	5	577	8	514	2	504	2	412	4	412	4	524	2	524	2	572	17
	WM	574	5	514	9	412	4	574	2	574	2	472	5	472	5	514	5	514	5	572	32
	NC	472	9	499	13	507	11	507	8	412	4	577	14	472	4	499	6	499	6	575	30
	NC	499	6	499	13	507	11	499	3	472	8	575	14	575	14	499	6	499	6	572	47
	VC	575	10	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11
	VC	472	13	551	31	526	17	577	5	575	8	575	14	575	14	499	8	499	8	575	18
	WM	557	10	507	31	472	5	507	5	575	11	575	11	575	11	499	10	499	10	572	32
	NC	499	6	499	13	526	17	499	9	557	5	472	5	472	5	499	9	499	9	572	32
	NC	577	10	499	13	412	9	499	6	499	9	472	5	472	5	499	6	499	6	572	32
	VC	472	9	451	45	412	4	507	8	577	14	472	15	472	15	499	10	499	10	572	32
	VC	557	10	557	43	507	8	557	5	577	8	472	15	472	15	557	10	557	10	572	32
	WM	557	5	557	20	526	17	526	4	472	4	526	17	526	17	526	4	526	4	575	18
	WM	457	8	457	14	526	17	526	5	575	14	526	17	526	17	499	5	499	5	575	18
	NC	557	10	499	13	575	14	575	10	575	10	575	10	575	10	575	10	575	10	575	10
	NC	557	10	557	13	575	14	575	10	575	10	575	10	575	10	575	10	575	10	575	10
	VC	557	10	557	13	575	14	575	10	575	10	575	10	575	10	575	10	575	10	575	10
	VC	499	3	557	43	507	8	557	5	577	8	472	15	472	15	499	3	499	3	575	18

Table 9. Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 9

CHIP		STIMULUS NUMBER																					Backward	
		Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ	Pe		
ABSOLUTE JUDGMENT RESPONSE			551	46	575	61	486	47	612	37	442	36	455	33	576	31	499	27	582	68	60472			
	JG		612	9	612	46	494	3	612	4	575	6	494	9	492	3	595	12	498	4	612	70		
	JG		498	5	612	50	577	8	498	8	612	4	498	12	498	12	575	12	498	4	612	70		
	WN		612	4	612	37	577	5	612	4	612	4	577	5	577	5	612	9	612	15	612	18		
	WN		612	18	612	46	574	5	612	4	575	8	499	6	574	2	612	11	612	15	412	9		
	MC		612	18	612	37	499	6	576	6	612	9	577	5	497	3	576	8	576	4	612	38		
	MC		612	37	575	54	571	5	498	8	612	9	492	11	499	6	498	15	498	22	577	35		
	VC		576	15	612	50	577	8	576	8	612	2	575	5	575	5	575	20	498	15	612	72		
	WN		498	22	612	37	497	6	612	9	612	9	497	6	499	6	612	11	498	22	612	18		
	WN		612	28	612	37	499	6	612	11	612	11	499	13	499	13	612	11	612	10	612	18		
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	MC		612	37	575	54	577	8	498	22	612	17	495	11	495	8	498	19	576	15	579	42		
	MC		612	37	612	37	577	18	612	11	498	15	495	11	495	11	612	37	612	37	577	35		
	VC		576	17	612	37	612	4	498	15	577	11	499	13	499	6	498	15	498	15	612	72		
	VC		498	22	612	37	577	11	498	15	612	11	499	6	577	10	498	15	498	15	612	70		
	WN		498	15	612	37	497	3	612	11	612	11	499	6	499	6	612	11	612	28	612	18		
	WN		498	22	612	37	492	3	498	15	498	5	492	9	492	9	612	11	612	28	612	9		
	MC		498	30	498	19	498	13	576	17	498	5	492	11	492	9	498	22	498	10	498	22		
	MC		612	27	575	54	495	18	612	22	612	11	495	18	495	18	612	37	612	37	575	54		
	VC		498	22	575	54	612	4	498	15	498	5	492	27	499	3	612	11	498	15	612	72		
	VC		498	22	575	54	577	8	498	15	612	11	499	11	499	9	498	15	498	15	612	72		
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT																								

Table 9 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 9

STIMULUS NUMBER

CHIP	Subj	STIMULUS NUMBER																		Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ	Pe
		551	46	575	61	496	46	476	37	442	36	455	33	524	31	499	27	527	28	464	72
	JG	412	9	612	46	496	3	612	4	575	6	496	9	492	3	575	12	496	4	612	70
	JG	496	5	612	57	575	8	496	5	612	4	496	12	496	12	575	12	496	4	612	70
	WN	612	4	612	57	575	5	612	4	612	4	575	5	575	5	612	9	612	18	612	18
	WN	412	18	612	46	575	5	612	4	575	5	496	6	575	2	612	18	612	18	472	9
	NC	612	18	612	57	575	6	575	8	612	9	575	5	496	5	575	8	575	4	612	28
	NC	612	37	575	57	575	5	496	5	612	9	496	9	496	18	496	15	496	22	575	35
	VC	412	21	612	46	575	5	496	5	612	9	496	18	496	18	496	15	496	22	575	35
	VC	412	17	612	46	575	5	496	5	612	9	496	18	496	18	496	15	496	22	575	35
	WN	496	22	612	57	575	6	612	9	612	9	496	6	496	6	612	18	496	22	612	18
	WN	612	28	612	57	575	6	612	18	612	18	496	18	496	18	612	18	496	22	612	18
	NC	612	37	575	57	575	8	496	22	575	17	496	18	496	18	496	18	496	22	575	42
	NC	612	37	612	57	575	18	612	18	496	18	496	18	496	18	612	18	496	22	575	42
	VC	575	17	612	57	575	6	496	18	496	18	496	18	496	18	612	18	496	22	575	42
	VC	496	22	612	57	575	18	496	18	496	18	496	18	496	18	612	18	496	22	575	42
	WN	496	15	612	57	575	18	496	18	496	18	496	18	496	18	612	18	496	22	575	42
	WN	496	22	612	57	575	18	496	18	496	18	496	18	496	18	612	18	496	22	575	42
	NC	496	22	612	57	575	18	496	18	496	18	496	18	496	18	612	18	496	22	575	42
	NC	496	22	612	57	575	18	496	18	496	18	496	18	496	18	612	18	496	22	575	42
	VC	496	22	612	57	575	18	496	18	496	18	496	18	496	18	612	18	496	22	575	42
	VC	496	22	612	57	575	18	496	18	496	18	496	18	496	18	612	18	496	22	575	42

Table 10 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 1

STIMULUS NUMBER																						
Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background			
	551	40	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White			
ABSOLUTE JUDGMENT RESPONSE	JG	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	JG	486	7	572	20	455	8	515	35	455	4	455	26	516	4	455	4	551	10	455	20	
	WM	486	7	575	48	486	25	575	30	486	13	486	13	486	7	486	13	575	48	486	13	
	WM	486	7	575	48	486	48	575	30	486	7	455	18	486	7	486	7	575	30	486	13	
	MC	486	30	575	30	486	13	575	30	486	13	455	18	486	3	486	7	575	48	486	13	
	MC	486	7	575	30	486	13	575	30	486	13	455	18	486	3	486	7	575	48	486	13	
	VC	486	7	575	30	486	13	575	30	486	13	455	18	486	3	486	7	575	48	486	13	
	VC	486	7	575	30	486	13	575	30	486	13	455	18	486	3	486	7	575	48	486	13	
	WM	486	7	575	30	486	13	575	30	486	13	455	18	486	3	486	7	575	48	486	13	
	WM	486	7	575	30	486	13	575	30	486	13	455	18	486	3	486	7	575	48	486	13	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	MC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	MC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	MC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	VC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	VC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	VC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	VC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	VC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	VC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
	VC	575	48	575	61	486	37	462	37	442	36	455	36	465	31	487	30	507	30	White		
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	
	WM	486	7	575	30	455	18	572	32	455	4	455	18	546	4	486	7	572	17	485	20	

Table // Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 2

CHIP	Subj	STIMULUS NUMBER																					Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ	Pe			
		551.40	575.61	486.37	582.18	486.37	582.18	486.37	582.18	486.37	582.18	486.37	582.18	486.37	582.18	486.37	582.18	486.37	582.18	486.37	582.18	White		
ABSOLUTE JUDGEMENT RESPONSE	JG	486	7	612	46	486	37	582	18	486	24	486	18	582	4	486	7	612	37	486	72			
	JG	486	7	612	50	582	8	612	37	486	7	582	17	486	15	486	7	612	28	486	72			
	WM	486	7	612	46	486	24	612	28	486	7	486	13	582	4	486	7	612	37	486	15			
	WM	486	7	612	46	486	13	612	28	486	7	486	7	612	4	486	7	612	28	582	40			
	MC	612	9	582	46	486	18	582	35	486	18	486	18	582	10	486	7	612	18	612	28			
	MC	612	18	582	54	486	7	612	18	486	7	486	15	612	9	486	7	582	42	486	22			
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	VC	486	4	612	50	486	20	612	18	486	13	486	18	582	10	486	7	582	42	486	22			
	VC	582	9	612	50	486	18	612	37	486	13	486	18	582	10	486	7	612	46	486	22			
	WM	612	4	612	37	486	37	612	37	486	37	486	24	582	8	486	13	612	37	582	31			
	WM	612	4	612	37	486	37	612	37	486	37	486	24	582	17	486	37	612	37	582	31			
	MC	486	22	582	54	486	26	582	37	486	26	486	33	582	17	486	37	582	61	582	31			
	MC	612	37	582	68	486	36	612	37	486	36	486	26	582	15	486	37	612	37	582	31			
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	VC	582	10	612	37	486	37	582	68	486	24	486	26	612	9	486	7	582	68	486	22			
	VC	612	9	612	37	486	26	582	68	486	24	486	26	612	9	486	13	582	68	486	22			
	WM	486	22	612	37	486	26	612	37	486	24	486	26	582	17	486	7	612	37	486	22			
	WM	486	7	612	37	486	18	612	37	486	24	486	18	582	8	486	7	612	37	486	15			
	MC	486	22	582	54	486	26	582	37	486	26	486	33	582	17	486	37	582	61	582	31			
	MC	612	37	582	68	486	36	612	37	486	36	486	26	582	15	486	37	612	37	582	31			

Table /2 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 3

Chip	Subj	STIMULUS NUMBER																Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe
ABSOLUTE JUDGEMENT RESPONSE		55140	57861			48837		61237		45333	582631							57767	60476
	30	6124K	57830			48836		57232	488	7455	8516					6124K	57217	58580	
	30	5768	57830			48838		57635	488	7455	266124K					4887	58120	58580	
	WM	6124K	57830			48837		57518	48813	48813	4887					48813	57518	58580	58580
	WM	6124K	57848			48835		57530	48815	48835	256124K					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	4887	7455	266124K					4887	57530	58580	58580
	MC	6124K	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	256124K					4887	57530	58580	58580
	WM	6124K	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	WM	6124K	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
RESPONSES TO MATCHING SETTING PRESENTED INDIVIDUALLY	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	MC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580
	VC	57511	57861			48835		57536	48813	48835	195518					6124K	57518	58580	58580

Table 13 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 4

Chip	Subj	Stimulus Number																		Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ	Pe
ABSOLUTE JUDGMENT RESPONSE		551	40	575	61	605	57	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	30	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	30	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	WM	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	WM	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	VC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	VC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	VC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57
	MC	612	40	612	37	612	37	612	37	612	37	612	36	612	33	612	31	612	27	587	57

Table 4 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 5

Chip	Subj	STIMULUS NUMBER												λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
		1	2	3	4	5	6	7	8	9	10	11	12												
ABSOLUTE JUDGMENT RESPONSES	30	55	40	52	61	100	97	60	77	60	77	60	77	55	40	52	61	100	97	60	77	60	77	60	77
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
RESPONSES TO MATCHING WITH INDIVIDUAL PRESENTED STIMULI	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12
	30	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12	8	12

Table 18 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Brood Band Slide Pair 2 and Projection Pair 6

Chip	Subj	STIMULUS NUMBER																				Background	
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ^{10}	Pe		
ABSOLUTE JUDGMENT RESPONSE		551	40	575	61	485	59	742	37	442	36	455	33	526	31	449	27	537	57	447	57		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY																							
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT																							
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		
	30	612	45	45	4	612	18	455	4	612	4	612	9	498	4	498	4	499	3	612	70		

Table 6 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slides Pair 2 and Projection Pair 7

CHIP		STATISTICAL FORMS																			
Subj	Y ¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³	Y ¹⁴	Y ¹⁵	Y ¹⁶	Y ¹⁷	Y ¹⁸	Y ¹⁹	Y ²⁰	
	551	40	525	61	405	57	414	37	442	36	445	33	544	31	447	22	547	57	447	57	
20	484	7	448	5	447	5	444	5	447	8	485	8	545	4	448	7	448	25	448	25	
30	448	7	448	50	485	50	444	25	487	8	487	18	444	4	444	7	444	15	444	15	
40	448	7	445	26	425	18	448	37	425	18	425	11	445	4	401	4	448	37	445	8	
50	444	4	445	33	425	30	444	25	425	30	444	11	448	7	425	11	448	25	445	4	
60	444	4	444	37	425	30	448	37	425	18	425	30	445	4	425	11	448	25	445	37	
70	444	7	448	37	425	30	444	37	425	48	425	30	444	3	425	11	448	37	444	17	
80	444	4	444	33	425	33	444	33	425	33	444	33	444	3	425	11	448	37	444	17	
90	444	7	448	37	425	18	444	37	425	18	425	18	444	7	425	11	448	37	445	18	
100	444	13	444	37	425	18	444	37	425	17	425	18	444	8	425	11	448	37	444	25	
110	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
120	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
130	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
140	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
150	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
160	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
170	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
180	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
190	444	4	444	37	425	17	444	37	425	17	425	17	444	8	425	11	448	37	444	18	
		STATISTICAL FORMS																			
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Table 77 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 8

STIMULUS NUMBER																			
Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background
CHIP																			

Table 88 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 9

STIMULUS NUMBER																						
Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background			
	551	40	575	61	486	57	612	37	492	36	455	53	546	31	499	27	587	57	WHITE			
ABSOLUTE JUDGMENT RESPONSE	JG	766	7	612	46	492	5	612	9	551	5	455	4	612	4	2	612	9	612	60		
	JG	612	4	612	50	40		612	28			455		575	6	486	7	612	18	595	20	
	WM	Black		612	37	514	9	612	28	514	9	514	5	514	4	514	5	612	28	612	9	
	WM	612	4	612	50	514	4	612	28	514	5	514	5	612	4	514	5	612	28	612	18	
	MC	612	18	595	54	499	6	612	28	492	3	499	3	612	1	514	5	612	28	595	40	
	MC	612	18	612	37	492	6	612	37	492	9	514	5	514	9	612	4	612	28	46	20	
	VC	551	8	612	50	492	12	595	54	492	12	492	3	514	8	514	5	612	28	46	20	
	VC	Black		612	50	492	18	595	54	492	3	492	3	514	8	514	5	612	28	46	20	
	WM	Black		612	37	492	9	492	22	492	9	492	9	575	11	499	3	492	30	5	7	
	WM	Black		612	60	499	13	612	28	499	6	499	6	575	11	514	5	612	28	46	20	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	MC	Black		595	54	455	18	492	30	455	8	455	8	612	9	612	18	595	40	50	583	62
	MC	Black		595	54	492	2	612	30	486	13	561	8	612	18	612	18	595	40	50	583	62
	VC	492	4	612	37	492	9	492	30	492	3	492	3	514	18	499	3	492	30	5	7	
	VC	587	8	612	37	499	6	612	37	492	9	551	10	612	4	492	3	492	30	5	7	
	WM	492	7	612	37	499	6	612	37	499	6	499	6	514	11	455	4	612	37	575	11	
	WM	Black		612	37	551	10	612	37	499	6	499	6	575	15	551	5	514	5	37	612	18
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	MC	Black		595	54	492	25	612	37	492	25	492	25	514	17	612	18	595	40	50	583	62
	MC	612	18	595	54	492	22	612	37	455	26	455	18	612	9	492	25	612	37	595	40	
	VC	587	8	595	54	499	6	492	30	492	3	551	10	612	4	492	3	492	30	5	7	
	VC	Black		612	37	492	3	492	22	492	3	551	10	587	18	486	7	2	28	WHITE		

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JUDGEMENT
RESPONSE

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Table // Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair /

Chip	Subj	STIMULUS NUMBER												Recorded								
		λ ¹	Pe	λ ²	Pe	λ ³	Pe	λ ⁴	Pe	λ ⁵	Pe	λ ⁶	Pe	λ ⁷	Pe	λ ⁸	Pe	λ ⁹	Pe	λ ¹⁰	Pe	
ABSOLUTE JUDGMENT RESPONSE	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
ATTENTIONAL CHALLENGE THRESHOLD STIMULI MATCHING OR RESPONSES	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4
	CA	40	725	4	554	07	554	4	554	12	585	4	554	09	554	01	585	4	554	01	585	4

Table 20 Wavelength (λ) and Excitation Purity (Po) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 2.

Chip	Subj	STIMULUS NUMBER																Background	
		λ^1	Po	λ^2	Po	λ^3	Po	λ^4	Po	λ^5	Po	λ^6	Po	λ^7	Po	λ^8	Po	λ^9	Po
ABSOLUTE JUDGMENT RESPONSES		551	40	578	61	496	57	612	37	492	36	485	33	506	31	499	27	587	57
	JO	496	13	496	42	496	13	612	37	496	25	496	5	496	5	496	13	496	5
	JO	496	25	496	42	496	13	612	46	496	13	496	5	496	15	496	25	496	15
	WM	496	7	546	17	496	7	612	46	496	13	612	4	612	28	496	37	612	18
	WM	496	13	496	15	496	7	612	46	496	37	612	9	612	28	496	13	612	28
	MC	496	7	612	18	551	26	612	25	499	13	551	20	587	18	499	27	575	18
	MC	496	7	496	15	496	7	595	54	496	7	575	36	612	18	499	26	587	35
	VC	496	13	496	17	496	13	612	37	496	13	496	22	496	22	496	13	496	22
	VC	496	13	496	17	496	13	612	37	496	13	612	18	496	22	496	13	496	22
	VC	496	13	496	17	496	13	612	37	496	13	612	18	496	22	496	13	496	22
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	MC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	MC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	MC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	VC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	VC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	VC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	WM	496	13	496	17	496	13	496	13	496	13	496	13	496	13	496	13	496	13
	WM	496	13	496	17	496	13	496	13	496	13	496	13	496	13	496	13	496	13
	WM	496	13	496	17	496	13	496	13	496	13	496	13	496	13	496	13	496	13
	WM	496	13	496	17	496	13	496	13	496	13	496	13	496	13	496	13	496	13
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	MC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	MC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	VC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	VC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	VC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33
	VC	496	25	546	31	496	25	496	30	496	30	496	33	496	33	496	33	496	33

Table 2/Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 3

STIMULUS NUMBER																					
Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background	Pe	
CHIP	551	40	525	61	486	57	612	37	442	36	465	33	544	27	537	57	White				
ABSOLUTE JUDGMENT RESPONSE	JG	455	4	455	56	455	8	583	21	612	21	583	12	583	12	583	12	583	12	455	57
	JG	455	4	455	60	486	6	583	21	486	13	583	8	583	10	612	21	583	10	455	50
	WM	486	37	486	37	486	35	525	11	486	37	525	11	525	18	486	37	525	30	486	15
	WM	486	35	455	4	486	4	525	2	486	35	525	11	525	18	486	35	525	30	486	25
	MC	486	7	525	11	486	7	525	11	486	7	525	11	525	13	486	7	525	13	486	15
	MC	486	13	525	11	486	7	525	11	486	13	525	11	525	13	486	13	525	13	486	15
	VC	486	13	525	11	486	7	525	11	486	13	525	11	525	13	486	13	525	13	486	15
	VC	486	13	525	11	486	7	525	11	486	13	525	11	525	13	486	13	525	13	486	15
	VC	486	13	525	11	486	7	525	11	486	13	525	11	525	13	486	13	525	13	486	15
	VC	486	13	525	11	486	7	525	11	486	13	525	11	525	13	486	13	525	13	486	15
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WM	486	25	White	486	25	486	25	486	25	486	25	486	25	486	25	486	25	486	25	
	WM	486	25	White	486	25	486	25	486	25	486	25	486	25	486	25	486	25	486	25	
	MC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	MC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WM	486	25	486	25	486	25	486	25	486	25	486	25	486	25	486	25	486	25	486	25
	WM	486	25	486	25	486	25	486	25	486	25	486	25	486	25	486	25	486	25	486	25
	MC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	MC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50
	VC	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50	486	50

Table 22 Wavelength (λ) and Excitation Purity (pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 4

Chip	Stimulus Number	Stimulus												Subj	
		1	2	3	4	5	6	7	8	9	10	11	12		
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	1A	155	155	155	155	155	155	155	155	155	155	155	155		
	2A	155	155	155	155	155	155	155	155	155	155	155	155		
	3A	155	155	155	155	155	155	155	155	155	155	155	155		
	4A	155	155	155	155	155	155	155	155	155	155	155	155		
	5A	155	155	155	155	155	155	155	155	155	155	155	155		
	6A	155	155	155	155	155	155	155	155	155	155	155	155		
	7A	155	155	155	155	155	155	155	155	155	155	155	155		
	8A	155	155	155	155	155	155	155	155	155	155	155	155		
	9A	155	155	155	155	155	155	155	155	155	155	155	155		
	10A	155	155	155	155	155	155	155	155	155	155	155	155		
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	1B	155	155	155	155	155	155	155	155	155	155	155	155		
	2B	155	155	155	155	155	155	155	155	155	155	155	155		
	3B	155	155	155	155	155	155	155	155	155	155	155	155		
	4B	155	155	155	155	155	155	155	155	155	155	155	155		
	5B	155	155	155	155	155	155	155	155	155	155	155	155		
	6B	155	155	155	155	155	155	155	155	155	155	155	155		
	7B	155	155	155	155	155	155	155	155	155	155	155	155		
	8B	155	155	155	155	155	155	155	155	155	155	155	155		
	9B	155	155	155	155	155	155	155	155	155	155	155	155		
	10B	155	155	155	155	155	155	155	155	155	155	155	155		
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	1C	155	155	155	155	155	155	155	155	155	155	155	155		
	2C	155	155	155	155	155	155	155	155	155	155	155	155		
	3C	155	155	155	155	155	155	155	155	155	155	155	155		
	4C	155	155	155	155	155	155	155	155	155	155	155	155		
	5C	155	155	155	155	155	155	155	155	155	155	155	155		
	6C	155	155	155	155	155	155	155	155	155	155	155	155		
	7C	155	155	155	155	155	155	155	155	155	155	155	155		
	8C	155	155	155	155	155	155	155	155	155	155	155	155		
	9C	155	155	155	155	155	155	155	155	155	155	155	155		
	10C	155	155	155	155	155	155	155	155	155	155	155	155		

Table 23 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 5

CHIP	Subj	STIMULUS NUMBER												Background								
		λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	λ	Pe	
ABSOLUTE JUDGMENT RESPONSES		551	40	575	61	585	67	595	73	604	86	554	36	485	33	546	31	499	27	587	57	6417C
	30																					
	30																					
	WM																					
	WM																					
	MC																					
	MC																					
	VC																					
	WM																					
	WM																					
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT																						
	VC																					
	VC																					
	WM																					
	WM																					
	MC																					
	MC																					
	VC																					
	VC																					
	WM																					
WM																						

Table 2. Wavelength (λ) and Excitation Purity (P_e) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 6

Chip	Subj	STIMULUS NUMBER																Background	
		λ^1	P_e^1	λ^2	P_e^2	λ^3	P_e^3	λ^4	P_e^4	λ^5	P_e^5	λ^6	P_e^6	λ^7	P_e^7	λ^8	P_e^8	λ^9	P_e^9
ABSOLUTE JUDGMENT RESPONSES		551	40	575	61	495	57	612	37	492	36	455	33	546	31	499	27	587	57
	JO	612	9	612	60	612	9	612	612	9	612	4	612	612	413	9	612	612	70
	JO	612	18	612	60	612	4	612	612	9	612	4	612	612	612	9	612	612	70
	WM	612	28	612	9	612	28	574	5	612	18	612	4	574	5	612	18	574	5
	WM	612	18	612	4	612	18	499	6	612	28	612	9	574	5	612	18	499	6
	MC	612	9	612	9	612	9	492	3	612	9	587	8	587	8	612	37	612	4
	MC	612	37	612	28	612	9	492	9	612	18	612	9	587	8	612	37	455	4
	VC	612	28	612	11	612	28	492	3	612	18	574	18	574	18	612	28	574	18
	VC	612	28	612	50	612	28	492	3	612	18	574	18	574	18	612	28	574	18
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WM	492	30	575	11	492	30	492	9	612	28	546	4	492	9	492	22	492	9
	WM	612	37	575	11	612	9	492	13	492	22	492	3	492	6	612	37	492	6
	MC	492	30	612	28	612	37	492	18	492	30	492	25	492	37	492	22	492	37
	MC	492	22	612	37	492	22	492	18	492	30	492	18	492	24	612	37	492	18
	VC	492	22	575	11	492	15	492	18	612	18	612	4	492	3	612	28	492	6
	VC	492	15	575	11	612	18	492	18	492	22	587	8	587	18	612	28	492	6
	WM	612	28	white	612	28	492	13	612	28	492	3	492	6	612	37	492	13	612
	WM	492	22	white	492	22	492	9	612	28	612	4	492	6	612	37	492	13	492
	MC	612	28	612	37	612	28	492	9	612	28	546	17	492	8	492	26	492	8
	MC	492	30	612	37	492	30	492	18	492	30	546	30	546	18	492	30	492	8
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	VC	492	15	575	11	492	12	492	6	492	22	612	9	612	4	492	30	492	9
	VC	492	22	575	11	612	18	492	6	492	22	587	18	492	6	492	22	551	5

Table 7. Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 7

STATION NUMBER	STIMULUS												SUBJ								
	1	2	3	4	5	6	7	8	9	10	11										
RESEARCHER LABORATORY ELECTRONIC	241411	8	725	5	155	8	725	4	786	01	155	72	554	5	155	11	525	07	155	2A	
	241419	41	725	02	155	42	725	4	786	02	155	72	554	8	1285	11	525	8	685	2A	
	81	525	25	554	17	525	72	554	4	786	19	25	25	554	17	525	72	554	17	525	2M
	81	525	81	554	25	25	81	554	8	725	25	25	25	554	25	25	81	554	25	25	2M
	241419	72	554	25	25	25	72	554	81	554	25	25	25	25	25	25	25	25	25	25	2M
	241419	72	554	25	25	25	81	554	8	554	25	25	25	25	25	25	25	25	25	25	2M
	241419	81	554	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2A
	241419	81	554	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2A
	81	525	25	554	17	525	13	725	42	725	17	525	54	786	17	525	42	725	17	525	2M
	72	725	25	554	86	525	72	554	81	725	86	525	72	554	86	525	72	554	86	525	2M
RESEARCHER LABORATORY ELECTRONIC	241414	41	725	25	25	8	554	8	725	25	25	25	25	25	25	25	25	25	25	25	2M
	241419	41	725	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2M
	241419	81	554	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2A
	81	525	25	554	17	525	13	725	42	725	17	525	54	786	17	525	42	725	17	525	2M
	72	725	25	554	86	525	72	554	81	725	86	525	72	554	86	525	72	554	86	525	2M
	241414	41	725	25	25	25	8	554	8	725	25	25	25	25	25	25	25	25	25	25	2M
	241419	41	725	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2M
	81	525	25	554	17	525	13	725	42	725	17	525	54	786	17	525	42	725	17	525	2M
	72	725	25	554	86	525	72	554	81	725	86	525	72	554	86	525	72	554	86	525	2M
	241414	41	725	25	25	25	8	554	8	725	25	25	25	25	25	25	25	25	25	25	2M
RESEARCHER LABORATORY ELECTRONIC	241414	41	725	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2M
	241419	41	725	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2M
	241419	81	554	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2A
	81	525	25	554	17	525	13	725	42	725	17	525	54	786	17	525	42	725	17	525	2M
	72	725	25	554	86	525	72	554	81	725	86	525	72	554	86	525	72	554	86	525	2M
	241414	41	725	25	25	25	8	554	8	725	25	25	25	25	25	25	25	25	25	25	2M
	241419	41	725	25	25	25	81	554	8	725	25	25	25	25	25	25	25	25	25	25	2M
	81	525	25	554	17	525	13	725	42	725	17	525	54	786	17	525	42	725	17	525	2M
	72	725	25	554	86	525	72	554	81	725	86	525	72	554	86	525	72	554	86	525	2M
	241414	41	725	25	25	25	8	554	8	725	25	25	25	25	25	25	25	25	25	25	2M

Table 26 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 3

Chip	Subj	STIMULUS NUMBER														Responses to Matching Stimuli Presented
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	
ABSOLUTE JUDGMENT RESPONSE	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
RESPONSES TO MATCHING STIMULI PRESENTED	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24
	24	155	155	155	155	155	155	155	155	155	155	155	155	155	155	24

Table 27 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 9

STIMULUS NUMBER

Chip	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background λ	Pe
		551	40	575	61	485	37	612	37	492	36	455	33	566	31	499	27	587	27	White	
ABSOLUTE JUDGMENT RESPONSE	JG	492	5	583	10	551	10	612	9	492	3	587	8	595	6	551	10	595	12	58	62
	JG	566	4	612	60	492	5	612	18	551	10	587	8	492	5	551	10	612	9	42	70
	WM	574	5	612	9	514	5	612	28	514	9	612	4	612	18	574	9	612	28	62	18
	WM	514	5	612	4	574	5	612	28	514	9	612	4	612	18	514	9	612	28	62	4
	MC	499	6	575	18	499	6	612	37	492	9	492	4	612	18	492	9	455	18	575	11
	MC	499	6	587	35	492	9	612	9	492	9	612	9	492	5	492	9	492	5	612	9
	VC	492	7	575	18	492	3	612	37	492	13	612	4	612	18	492	18	612	28	White	
	VC	492	7	575	18	492	3	612	37	492	6	575	8	612	18	492	18	612	28	White	
	WM	551	10	575	11	551	10	587	68	551	10	612	9	612	18	499	19	612	18	White	
	WM	551	5	612	4	551	5	612	28	551	10	612	9	612	18	551	10	612	28	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	MC	499	6	575	30	551	10	492	30	551	10	566	17	566	24	551	10	566	24	57	20
	MC	499	6	587	53	499	6	612	37	499	6	566	17	566	24	499	6	566	24	575	30
	VC	499	3	575	11	551	10	612	28	499	6	587	18	492	15	551	10	612	28	White	
	VC	499	6	575	18	499	3	587	53	551	10	587	18	587	35	551	10	612	28	White	
	WM	551	10	White	551	10	612	28	551	20	612	9	612	18	551	20	612	28	White		
	WM	551	10	575	11	551	20	612	28	551	20	612	9	612	18	551	20	612	28	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	MC	492	9	583	42	492	9	492	22	455	8	612	9	566	17	455	8	566	24	575	30
	MC	486	13	587	35	486	13	492	22	486	13	566	8	612	28	486	13	612	28	575	30
	VC	551	10	575	18	551	5	612	37	551	20	587	35	587	35	551	10	612	28	White	
	VC	492	9	575	18	499	6	612	37	492	9	612	9	492	15	499	6	612	18	White	

TABLE I

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair /

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 1	W	570	47	570	32	572	17	570	17	572	32	575	49	570	32	570	32	572	47	478	22
	ILL. W	575	48	575	30	576	15	576	16	575	30	576	5	572	32	572	47	575	48	478	24
	R-1	575	62	575	48	578	62	579	53	575	48	578	62	578	62	575	30	578	62	481	36
	R-2	575	11	572	32	478	22	478	32	575	30	455	17	478	22	572	32	575	17	478	41
	G-1	575	48	572	47	576	24	572	11	572	32	575	47	572	17	572	47	575	47	478	22
	G-2	575	11	576	8	577	18	577	18	575	30	573	10	572	11	570	17	570	17	481	36
	Y-1	575	61	575	30	576	24	576	24	575	30	572	60	576	24	575	61	575	48	455	17
	Y-2	575	61	575	48	576	24	576	24	575	30	575	48	576	16	575	61	575	61	455	17
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. NO. 2	W	575	48	575	30	575	30	575	30	572	47	575	48	575	30	572	32	575	30	478	36
	ILL. W	575	48	575	30	576	16	576	16	575	48	572	32	572	32	572	47	575	48	478	22
	R-1	575	40	578	62	612	28	612	28	575	53	577	53	612	18	575	48	575	53	478	37
	R-2	455	4	575	18	478	22	478	22	575	30	572	11	478	22	572	32	575	11	481	36
	G-1	572	47	575	30	575	11	572	11	572	32	572	47	572	17	572	32	570	47	478	24
	G-2	575	18	575	30	576	16	576	16	575	18	577	8	478	6	572	47	478	6	481	36
	Y-1	575	61	575	48	576	24	576	24	575	48	576	24	576	24	575	61	575	48	478	32
	Y-2	575	48	575	30	576	24	576	24	575	30	575	48	576	24	575	48	575	48	478	22
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. NO. 3	W	570	47	572	32	572	17	572	11	572	17	570	17	575	18	572	32	572	17	576	24
	ILL. W	575	61	570	47	578	42	576	17	572	47	575	48	572	32	570	49	572	47	576	17
	R-1	577	53	575	62	478	19	478	19	578	62	577	53	478	12	578	62	577	53	478	36
	R-2	575	18	572	32	478	22	478	22	575	30	572	11	575	18	575	30	575	11	576	31
	G-1	576	17	576	35	574	5	478	3	572	32	557	20	572	11	575	30	576	35	576	16
	G-2	575	30	575	18	576	8	576	8	575	18	478	5	478	6	575	18	574	2	576	31
	Y-1	575	61	575	48	576	31	576	31	575	48	575	61	576	24	575	61	575	48	576	24
	Y-2	575	48	575	30	576	24	576	24	575	48	575	61	575	30	576	24	575	48	576	24
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. NO. 4	W	570	47	572	47	572	17	572	17	572	32	572	30	572	32	572	32	572	32	572	24
	ILL. W	576	8	575	27	455	19	455	17	575	27	576	8	576	8	576	8	455	17	576	24
	R-1	575	40	575	40	575	40	575	27	575	40	575	40	575	27	575	40	575	40	478	22
	R-2	576	12	478	19	576	8	478	5	612	9	612	18	612	9	612	18	612	9	576	32
	G-1	571	20	570	32	574	10	574	5	572	30	576	35	576	8	572	32	576	35	478	22
	G-2	575	12	577	35	478	5	478	5	575	18	575	18	455	4	575	11	575	18	576	32
	Y-1	575	34	575	34	478	24	478	24	575	40	575	61	575	40	575	61	575	34	576	32
	Y-2	575	48	575	30	455	17	455	24	575	61	575	48	575	30	575	48	575	48	576	32
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. NO. 5	W	572	47	572	32	570	17	572	17	572	32	575	18	572	17	572	32	572	32	576	32
	ILL. W	575	61	572	60	576	17	576	19	575	48	572	47	575	40	575	40	575	61	576	24
	R-1	575	40	575	40	575	40	575	27	575	40	575	40	575	27	575	40	575	40	478	22
	R-2	576	8	575	18	575	11	575	11	575	18	575	18	575	11	576	8	575	18	478	31
	G-1	572	32	572	17	572	11	572	11	572	32	572	11	572	32	572	17	572	17	576	16
	G-2	575	18	575	11	573	10	478	24	575	11	574	2	575	30	575	30	575	18	576	32
	Y-1	575	61	575	48	576	17	576	17	575	48	575	61	575	30	575	61	575	61	576	32
	Y-2	575	61	575	48	575	18	575	18	575	48	575	61	575	30	575	61	575	61	576	31

TABLE 2

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair /

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 6	ILL. W	570	47	570	32	570	49	570	17	570	17	570	32	570	18	570	32	570	32	566	24
	R-1	575	48	575	30	575	11	575	11	575	47	575	48	575	42	575	30	575	62	455	19
	R-2	575	22	575	42	575	35	575	18	575	42	575	35	575	18	575	42	575	35	478	22
	G-1	575	11	575	18	575	24	575	24	575	18	575	11	575	22	575	18	575	11	455	31
	G-2	566	8	566	95	570	2	570	3	570	17	566	17	570	10	570	17	566	95	566	8
	Y-1	575	30	570	22	481	12	481	24	570	32	575	30	481	6	575	11	570	17	566	31
	Y-2	575	61	575	48	566	24	566	31	575	61	575	48	566	24	575	61	575	48	566	24
Chip		587	67	449	27	566	31	455	53	442	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 7	ILL. W	587	35	587	18	587	18	587	18	587	35	587	18	587	18	587	35	587	35	551	20
	R-1	587	42	587	62	587	35	587	18	587	42	587	35	587	42	587	35	587	35	570	9
	R-2	587	53	587	35	587	35	587	35	587	35	587	53	587	35	587	35	587	35	551	42
	G-1	449	3	575	5	551	5	551	5	551	5	566	17	570	2	570	5	449	3	491	20
	G-2	612	18	587	12	612	9	587	10	575	11	612	18	575	11	587	21	587	18	570	9
	Y-1	514	2	551	20	551	10	514	5	514	5	587	18	449	6	587	18	514	2	477	27
	Y-2	575	54	587	53	587	68	587	35	587	35	587	68	587	35	587	53	587	68	477	20
Chip		587	67	449	27	442	31	455	53	442	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 8	ILL. W	587	62	587	35	587	21	587	21	587	42	587	21	587	21	587	42	587	42	566	35
	R-1	587	40	587	42	587	16	587	8	587	42	587	35	587	37	587	35	587	35	551	10
	R-2	587	53	587	35	587	35	587	35	587	35	587	53	587	35	587	35	587	35	551	42
	G-1	575	11	566	4	455	4	455	4	455	4	575	11	575	11	575	11	575	11	477	20
	G-2	566	8	575	18	551	5	570	5	587	35	566	8	570	10	570	21	566	8	570	32
	Y-1	575	54	575	30	481	12	481	12	575	30	575	54	575	30	575	30	575	30	551	42
	Y-2	575	54	587	53	587	42	587	42	587	35	587	53	587	42	587	35	587	42	570	5
Chip		587	67	449	27	566	31	455	53	442	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 9	ILL. W	566	17	566	8	566	8	566	17	566	17	566	17	566	17	566	17	566	17	566	8
	R-1	587	35	587	27	587	27	587	36	587	35	587	27	587	27	587	27	587	27	477	3
	R-2	587	35	587	27	587	18	587	18	587	35	587	35	587	35	587	35	587	35	551	20
	G-1	575	6	612	4	486	7	486	7	612	9	575	6	486	12	612	9	575	6	486	23
	G-2	587	10	587	18	449	6	449	13	587	18	587	10	587	18	587	18	587	18	570	19
	Y-1	587	95	575	27	481	24	486	35	587	35	575	27	587	42	587	35	587	27	477	9
	Y-2	566	8	442	12	486	13	486	25	587	35	551	5	486	13	587	35	575	27	570	2
Chip		587	67	449	27	566	31	455	53	442	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 10	ILL. W	587	18	587	18	587	18	587	18	587	18	587	18	587	18	587	18	587	18	551	10
	R-1	612	18	587	42	587	42	587	8	587	42	587	42	587	27	612	9	587	27	477	9
	R-2	587	53	587	35	587	35	587	18	587	35	587	53	587	35	587	35	587	35	551	42
	G-1	575	8	455	17	477	20	477	20	477	20	477	8	477	11	477	11	477	11	477	23
	G-2	587	10	587	18	566	1	570	5	575	12	587	10	587	18	587	18	587	18	570	5
	Y-1	486	7	486	4	411	24	486	13	612	4	575	12	486	6	587	8	612	9	477	31
	Y-2	587	27	587	53	587	21	587	21	575	27	587	27	587	53	587	53	587	27	477	6
Chip		587	62	575	40	455	17	455	17	587	53	575	27	587	35	575	27	612	18	477	3

TABLE B

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 1

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 11	AMB. ILL. W	573	42	573	42	573	42	573	21	573	42	573	42	573	42	573	42	573	42	574	5
	R-1	612	9	579	35	455	8	573	62	579	53	573	42	573	27	573	27	492	9		
	R-2	579	53	579	35	579	35	579	35	579	35	579	35	579	35	579	35	579	35	574	15
	G-1	612	4	579	18	579	18	491	24	579	18	612	4	496	13	612	4	579	8	574	15
	G-2	579	8	575	12	579	5	576	6	579	18	573	21	579	18	579	18	573	21	575	18
	Y-1	579	18	575	20	481	12	481	24	481	6	575	11	492	9	575	11	612	4	492	6
	Y-2	575	40	579	35	576	16	576	16	575	27	612	28	579	35	575	27	612	28	492	6
Chip		575	27	579	35	576	8	576	17	575	27	612	28	575	27	579	35	612	18	499	6
PROJ. PR. NO. 12	AMB. ILL. W	573	62	573	42	573	42	573	21	573	42	573	42	573	42	573	42	573	62	576	35
	R-1	575	40	573	62	573	20	573	20	573	42	612	28	573	42	575	27	575	27	579	9
	R-2	573	62	579	53	573	42	579	35	579	35	579	35	579	35	573	62	579	53	571	43
	G-1	573	10	579	18	573	21	573	42	573	21	579	8	579	18	573	21	573	10	551	43
	G-2	573	6	575	27	571	10	574	5	579	35	579	8	573	21	575	27	573	21	572	47
	Y-1	612	4	496	7	496	12	492	9	576	8	612	28	576	17	612	9	575	12	576	75
	Y-2	575	57	579	53	579	35	573	21	575	27	612	18	575	27	612	28	612	27	574	9
Chip		612	37	575	40	576	8	576	17	575	40	612	37	576	17	575	40	575	34	574	15
PROJ. PR. NO. 13	AMB. ILL. W	579	35	579	35	579	35	571	5	579	35	579	35	579	35	579	35	579	35	576	25
	R-1	573	27	579	35	576	17	576	35	579	35	575	12	573	42	575	27	573	27	574	2
	R-2	579	66	579	53	579	35	579	35	579	53	579	53	579	53	579	53	579	53	571	21
	G-1	496	12	579	35	478	11	478	11	579	35	496	12	579	35	496	6	496	6	576	35
	G-2	576	8	579	35	571	5	571	9	575	12	571	10	573	10	575	27	579	18	572	47
	Y-1	573	21	573	42	478	22	481	24	579	18	612	9	481	12	575	12	612	9	576	54
	Y-2	575	34	612	37	579	18	579	10	575	40	612	28	579	35	575	40	612	28	574	5
Chip		575	40	575	40	551	10	551	20	575	40	612	18	576	16	575	27	612	18	551	20
PROJ. PR. NO. 14	AMB. ILL. W	579	35	579	35	579	35	579	18	579	35	579	35	579	35	579	35	579	35	571	20
	R-1	612	18	579	53	576	17	576	17	576	8	612	18	576	17	612	18	612	18	551	20
	R-2	575	54	575	40	575	40	575	27	575	40	575	40	575	40	575	40	575	40	551	31
	G-1	496	15	576	16	576	17	576	35	576	16	576	8	496	15	496	5	496	4	551	31
	G-2	573	21	575	12	551	5	574	5	575	12	575	6	576	17	579	18	579	35	576	35
	Y-1	612	9	575	12	496	9	496	6	612	18	573	21	574	5	573	10	455	4	576	54
	Y-2	575	34	612	28	571	5	571	5	575	27	575	40	579	35	575	40	612	28	574	9
Chip		575	40	612	28	576	17	576	35	575	40	612	28	579	53	575	40	612	28	574	9
PROJ. PR. NO. 15	AMB. ILL. W	573	62	573	42	573	42	573	21	573	42	573	42	573	42	573	42	573	62	571	31
	R-1	575	27	579	35	492	3	492	3	492	3	575	27	492	3	612	18	612	28	579	5
	R-2	579	68	579	53	579	53	579	35	579	53	579	53	579	53	579	53	579	53	571	43
	G-1	496	5	576	8	576	16	574	5	576	8	576	16	576	8	576	16	576	16	551	20
	G-2	573	10	579	35	571	10	574	5	575	27	576	8	576	17	579	18	579	18	576	54
	Y-1	575	11	612	4	551	10	574	5	481	6	574	2	573	42	612	9	575	12	571	43
	Y-2	575	34	575	34	612	28	576	17	575	40	612	28	575	27	612	18	612	27	574	9
Chip		575	40	612	28	576	17	576	35	575	40	612	28	579	53	575	40	612	28	574	9

TABLE 4

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair /

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16	AMB. ILL. W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	48
	AMB. ILL. R-1	455	4	455	19	486	25	486	25	587	35	455	8	583	42	583	21	455	4	587	18
	AMB. ILL. R-2	612	4	612	9	478	22	478	22	612	9	612	9	612	9	612	4	612	4	583	48
	AMB. ILL. G-1	586	8	583	10	585	11	585	11	583	21	583	5	583	21	587	18	586	8	583	62
	AMB. ILL. G-2	583	10	583	21	478	11	478	11	585	6	587	8	583	21	587	18	583	10	583	78
	AMB. ILL. Y-1	587	18	585	27	587	5	581	10	612	18	455	17	455	17	455	17	455	17	587	8
	AMB. ILL. Y-2	583	21	583	42	586	17	455	17	583	42	586	4	455	17	587	18	583	10	583	10
Chip		587	67	499	27	586	21	455	33	492	36	612	31	486	37	585	61	581	40	WHITE	
PROJ. PR. No. 17	AMB. ILL. W	583	11	583	11	583	11	583	11	583	11	587	35	583	11	583	11	583	11	583	47
	AMB. ILL. R-1	583	10	587	18	455	8	455	8	581	35	455	4	583	21	586	8	455	8	583	10
	AMB. ILL. R-2	587	61	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	586	35
	AMB. ILL. G-1	612	4	612	9	585	12	585	12	612	9	585	12	583	11	612	4	612	4	583	32
	AMB. ILL. G-2	587	8	583	21	583	10	585	11	585	11	583	10	583	11	583	10	587	8	583	62
	AMB. ILL. Y-1	583	10	587	18	585	6	612	4	583	21	587	8	587	18	587	8	583	10	585	61
	AMB. ILL. Y-2	587	18	583	42	486	6	486	6	587	35	455	27	585	27	587	35	486	15	586	8
Chip		587	67	499	27	586	21	455	33	492	36	612	31	486	37	585	61	581	40	WHITE	
PROJ. PR. No. 18	AMB. ILL. W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	42
	AMB. ILL. R-1	583	21	583	42	587	35	587	18	455	8	583	10	583	21	585	6	585	1	586	8
	AMB. ILL. R-2	587	61	587	35	583	21	587	35	587	35	587	35	587	35	585	6	587	35	587	31
	AMB. ILL. G-1	587	8	587	18	585	12	587	18	587	18	585	6	587	18	585	6	586	6	586	35
	AMB. ILL. G-2	586	8	581	5	583	11	583	11	583	11	587	5	583	11	586	8	587	10	583	42
	AMB. ILL. Y-1	583	10	587	18	585	18	583	17	583	21	587	8	587	18	587	8	583	10	585	30
	AMB. ILL. Y-2	612	18	587	35	583	21	583	21	585	27	612	18	585	27	612	18	612	28	581	5
Chip		587	67	499	27	586	21	455	33	492	36	612	31	486	37	585	61	581	40	WHITE	
PROJ. PR. No. 19	AMB. ILL. W	585	6	585	12	585	12	585	12	585	12	585	12	585	12	585	12	585	12	585	40
	AMB. ILL. R-1	455	8	455	17	455	17	455	17	455	17	455	4	455	17	455	4	455	8	612	46
	AMB. ILL. R-2	585	27	585	27	585	40	585	40	585	27	585	27	585	27	585	27	585	27	585	54
	AMB. ILL. G-1	612	4	612	9	478	11	478	11	478	11	478	5	587	8	612	4	612	4	612	30
	AMB. ILL. G-2	581	5	455	8	586	21	586	8	586	8	581	5	583	10	586	8	581	10	585	54
	AMB. ILL. Y-1	612	4	422	9	584	2	584	2	488	12	492	3	585	12	492	3	492	3	585	54
	AMB. ILL. Y-2	585	27	586	24	586	31	586	31	586	24	455	8	586	31	581	10	455	8	585	37
Chip		587	67	499	27	586	21	455	33	492	36	612	31	486	37	585	61	581	40	WHITE	
PROJ. PR. No. 20	AMB. ILL. W	587	8	587	18	587	18	587	18	587	18	587	18	587	18	587	18	587	18	587	35
	AMB. ILL. R-1	481	24	481	24	583	21	587	18	455	17	455	4	587	18	455	8	455	4	585	6
	AMB. ILL. R-2	587	53	587	18	587	35	587	35	587	18	587	18	587	18	587	18	587	18	587	17
	AMB. ILL. G-1	478	5	486	24	478	22	612	9	481	24	478	5	478	5	481	12	478	5	612	18
	AMB. ILL. G-2	587	18	581	5	587	8	583	21	583	10	586	8	583	21	586	8	586	8	585	40
	AMB. ILL. Y-1	486	7	486	13	581	5	583	21	478	8	455	4	581	5	486	9	455	8	486	30
	AMB. ILL. Y-2	584	2	581	10	586	24	586	31	581	20	586	8	586	17	581	5	455	8	585	18
Chip		486	7	486	25	586	17	586	17	486	25	587	18	478	11	486	7	481	6	585	27

TABLE 5

Wavelength (λ) and Excitation Purity (Pe); Narrowband Slide Pair /

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	ILL. N	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	8
	ILL. R-1	455	8	486	25	487	18	589	18	481	24	455	8	585	12	478	22	455	8	613	4
	ILL. R-2	587	53	587	35	587	53	589	53	587	18	587	53	587	18	587	18	587	35	587	10
	G-1	478	5	478	22	478	5	478	11	478	22	478	5	478	11	478	11	478	5	486	25
	G-2	551	5	586	8	578	11	578	11	578	11	586	8	583	10	583	10	583	10	587	35
	Y-1	481	6	481	12	478	5	612	4	478	11	486	7	583	10	478	11	481	6	486	22
	Y-2	587	53	586	31	587	68	587	68	586	31	587	53	586	24	586	31	585	20	586	24
	Chip	586	4	486	13	586	17	586	24	486	25	586	8	587	12	486	25	586	17	585	6
PROJ. PR. No. 22	ILL. N	587	61	489	27	581	31	483	33	486	36	612	37	486	37	573	61	587	40	587	40
	ILL. R-1	575	30	575	18	575	18	575	30	575	18	575	18	575	18	575	18	575	18	455	17
	ILL. R-2	583	40	455	17	575	30	575	30	481	17	575	80	455	8	586	8	575	18	586	24
	G-1	587	53	486	17	583	62	575	48	486	17	583	62	486	17	486	17	587	53	487	36
	G-2	583	10	455	17	575	11	575	11	455	17	587	8	455	17	455	24	455	4	586	24
	Y-1	586	8	586	8	578	17	575	18	587	5	586	17	586	24	581	10	586	17	586	31
	Y-2	575	30	478	11	578	17	575	18	481	12	575	11	575	11	478	11	575	11	586	24
PROJ. PR. No. 23	ILL. N	587	53	586	31	587	68	587	68	586	31	587	53	586	24	586	31	575	30	586	24
	ILL. R-1	575	30	586	32	575	30	575	30	586	24	575	30	586	24	586	31	575	18	586	24
	ILL. R-2	587	61	489	27	581	31	483	33	486	36	612	37	486	37	573	61	587	40	587	40
	G-1	583	42	583	21	583	21	583	21	583	21	583	42	583	21	583	21	583	21	487	6
	G-2	583	42	478	11	583	21	583	42	478	11	583	21	583	42	583	21	486	8	487	12
	Y-1	575	54	575	40	575	27	575	27	575	27	575	40	575	27	575	27	575	40	581	31
PROJ. PR. No. 24	ILL. N	481	6	481	24	481	24	481	24	481	24	481	12	481	24	481	12	481	6	481	23
	ILL. R-1	551	5	584	2	583	10	575	11	478	11	583	10	575	10	586	8	551	5	578	11
	ILL. R-2	583	10	578	17	578	17	575	30	478	11	575	11	486	7	481	6	586	8	478	22
	G-1	587	35	583	42	583	42	583	21	586	24	583	62	586	31	587	35	587	35	486	13
	G-2	583	62	587	18	486	15	583	42	583	42	587	18	586	17	583	42	587	18	487	12
	Chip	587	61	489	27	581	31	483	33	486	36	612	37	486	37	573	61	587	40	587	40
PROJ. PR. No. 25	ILL. N	587	53	587	18	587	53	587	18	587	18	587	53	587	18	587	18	587	18	587	30
	ILL. R-1	575	18	581	5	583	21	551	5	586	17	575	27	581	10	581	5	612	18	614	5
	ILL. R-2	587	53	587	53	587	35	587	35	587	35	587	53	587	35	587	35	587	53	587	43
	G-1	612	4	587	8	587	8	587	18	587	8	612	4	587	18	587	8	612	4	587	9
	G-2	551	5	584	2	585	12	575	11	551	5	587	8	583	10	587	8	587	18	587	32
	Y-1	486	12	487	6	487	12	478	5	486	9	586	8	551	5	584	2	583	10	587	30
PROJ. PR. No. 26	ILL. N	587	35	583	42	583	21	587	18	575	27	583	21	587	18	586	24	587	35	587	5
	ILL. R-1	583	42	587	35	587	35	586	17	575	27	587	8	612	18	575	27	583	42	587	3
	ILL. R-2	587	61	489	27	581	31	483	33	486	36	612	37	486	37	573	61	587	40	587	40
	G-1	578	11	578	11	578	11	578	11	578	11	578	11	578	11	578	11	578	11	578	32
	G-2	587	18	586	8	586	17	587	5	586	8	572	11	583	21	583	10	586	8	586	8
	Y-1	575	54	587	53	587	35	587	35	587	35	587	68	587	53	587	53	587	68	587	31
PROJ. PR. No. 27	ILL. N	612	4	583	10	583	10	583	01	575	12	612	4	583	21	587	8	587	8	587	30
	ILL. R-1	587	5	583	10	583	10	578	11	578	18	587	8	583	10	587	8	587	10	583	42
	ILL. R-2	575	11	578	11	578	11	578	11	578	11	578	11	578	11	578	11	578	11	578	11
	G-1	587	53	587	35	583	42	583	21	587	18	575	27	612	18	587	35	587	35	587	5
	G-2	583	42	587	35	586	17	486	17	583	21	587	18	586	17	583	21	587	18	587	5
	Chip	587	42	587	35	586	17	486	17	583	21	587	18	586	17	583	21	587	18	587	5

TABLE 6

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair/

Wavelength (Å) and Excitation Polarity (Pe):																			
1		2		3		4		5		6		7		8		9		back	
λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 26																			
AMB. ILL. W		RESPONSES		575 6	587 18	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 27
R-1				481 6	612 9	481 6	481 6	481 6	481 6	481 6	481 6	481 6	481 6	481 6	481 6	481 6	481 6	481 6	481 6
R-2				587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 27
G-1				587 8	587 10	478 11	478 11	587 8	587 8	587 8	587 8	587 8	587 8	587 8	587 8	587 8	587 8	587 8	587 35
G-2				612 4	587 10	478 5	481 24	587 8	478 22	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35
Y-1				587 8	575 27	481 24	481 36	587 8	42 587	27 612	18 587	35 587	35 587	35 587	35 587	35 587	35 587	35 587	35 587
Y-2				587 10	587 18	481 12	481 24	587 17	587 42	587 18	612 18	587 10	612 9	587 10	612 9	587 10	612 9	587 10	612 9
Chip				587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37
PROJ. PR. No. 27																			
AMB. ILL. W		RESPONSES		572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
R-1				455 8	587 18	481 12	481 24	587 8	455 17	587 21	587 8	587 10	587 6	587 10	587 6	587 10	587 6	587 10	587 6
R-2				587 68	587 21	587 35	587 18	587 35	587 21	587 35	587 21	587 35	587 17	587 35	587 17	587 35	587 17	587 35	587 17
G-1				612 4	612 9	478 5	455 4	492 3	492 6	572 11	612 4	612 4	487 12	612 4	487 12	612 4	487 12	612 4	487 12
G-2				587 5	587 8	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
Y-1				587 10	587 21	478 5	478 5	587 8	481 6	587 8	587 10	612 4	587 8	587 10	612 4	587 8	587 10	612 4	587 8
Y-2				587 17	587 42	478 11	478 22	587 35	587 21	587 35	587 21	587 35	587 21	587 35	587 21	587 35	587 21	587 35	587 21
Chip				587 10	587 18	481 12	481 24	587 17	587 42	587 18	612 18	587 10	612 9	587 10	612 9	587 10	612 9	587 10	612 9
Chip				587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37

TABLE 7

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

	1	2	3	4	5	6	7	8	9	back											
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe							
PROJ. PR. NO. 1	AMB. ILL. W	572	47	572	32	572	32	575	18	572	17	572	32	572	32	572	32	572	47	455	24
	R-1	575	48	575	30	587	8	566	8	575	30	572	47	586	16	572	47	575	27	478	22
	R-2	572	62	575	48	575	62	575	62	575	48	575	62	575	48	575	48	575	48	476	37
	G-1	575	30	575	18	478	11	478	22	572	17	572	11	478	11	572	32	572	17	476	37
	G-2	572	47	572	32	572	17	455	4	575	18	575	30	572	11	572	32	572	47	478	22
	Y-1	575	48	575	30	575	30	575	30	575	30	575	48	572	32	572	47	575	30	455	24
Chip	572	60	575	48	566	31	566	31	572	47	575	61	566	24	572	60	572	47	455	24	
	575	61	575	48	586	24	566	8	575	30	575	61	566	24	575	48	575	61	455	24	
	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	531	40			

PROJ. PR. NO. 2	AMB. ILL. W	572	60	572	47	572	32	575	30	575	30	572	32	572	32	572	32	572	47	455	17
	R-1	587	53	575	30	476	15	476	15	575	30	587	35	575	27	575	48	575	35	455	17
	R-2	572	62	572	62	575	62	575	62	572	62	575	62	575	62	575	48	575	62	478	36
	G-1	572	32	575	30	455	8	455	8	575	18	575	10	478	11	572	32	572	17	478	36
	G-2	575	30	572	32	572	11	531	5	572	17	575	30	572	11	572	47	575	62	478	22
	Y-1	575	61	575	48	575	42	575	42	575	48	575	42	572	32	575	30	575	48	455	24
Chip	575	61	575	48	566	31	566	31	575	48	575	30	566	31	575	61	575	48	455	24	
	575	61	575	48	586	24	566	8	575	30	575	61	586	24	575	48	575	61	455	24	
	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	531	40			

PROJ. PR. NO. 3	AMB. ILL. W	572	32	572	32	572	17	572	17	572	32	572	17	572	17	572	32	572	32	566	24
	R-1	575	48	575	62	455	8	455	8	575	30	566	35	455	17	566	54	566	35	566	17
	R-2	572	62	575	62	476	12	476	12	575	62	575	62	575	62	575	48	575	42	478	32
	G-1	575	11	478	5	478	22	478	22	572	11	575	18	455	8	575	18	575	11	455	24
	G-2	566	35	572	32	531	10	514	5	572	17	566	8	531	5	572	32	566	17	566	24
	Y-1	575	30	575	30	575	18	575	11	575	30	575	18	575	18	575	30	575	18	566	31
Chip	575	61	575	48	566	31	575	48	575	61	566	24	575	61	575	48	566	31	566	24	
	575	61	575	48	566	17	566	24	575	48	575	61	575	30	575	61	575	61	566	24	
	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	531	40			

PROJ. PR. NO. 4	AMB. ILL. W	572	47	572	32	572	17	572	17	572	32	572	17	572	17	572	32	572	47	572	47
	R-1	566	35	572	32	455	8	455	8	566	35	566	35	455	17	575	40	531	20	566	31
	R-2	587	53	575	53	575	53	575	53	575	53	575	53	575	53	575	53	575	53	575	53
	G-1	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	18
	G-2	566	35	566	17	572	5	572	5	566	17	566	8	531	5	572	32	566	8	531	24
	Y-1	572	47	572	47	572	17	478	11	572	32	572	32	572	17	572	47	572	17	572	47
Chip	572	60	572	47	566	24	566	17	572	40	572	60	572	47	572	60	572	47	572	60	
	572	60	572	47	455	8	455	12	572	47	572	60	572	32	575	30	575	61	566	31	
	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	531	40			

PROJ. PR. NO. 5	AMB. ILL. W	572	47	572	32	572	17	572	17	572	32	572	17	572	17	572	32	572	47	572	47
	R-1	587	53	566	34	566	35	566	17	566	35	566	35	566	17	566	35	566	35	566	31
	R-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-1	575	18	575	11	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	18
	G-2	575	30	572	32	566	8	531	5	572	11	566	35	566	8	572	32	531	10	566	24
	Y-1	572	47	572	32	572	17	572	11	572	32	572	32	572	17	572	47	572	47	572	47
Chip	575	61	575	48	575	30	575	18	575	61	575	61	575	48	575	61	575	61	566	31	
	575	61	575	48	575	30	575	30	575	48	575	61	575	30	575	48	575	61	566	31	

TABLE 8

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

	1	2	3	4	5	6	7	8	9	back										
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe

PROJ. PR. NO. 6

AMB. ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

RESPONSES

570	32	570	32	570	17	570	17	570	32	570	32	570	17	570	32	570	32	570	32	570	17
576	34	551	20	551	10	551	10	551	20	551	10	576	17	576	35	576	35	576	35	576	17
575	61	575	61	575	53	496	15	575	62	575	62	575	48	575	48	575	48	455	27		
575	48	572	47	453	17	572	17	572	32	575	11	453	8	575	30	575	18	576	31		
576	17	572	17	572	17	574	5	576	17	576	35	551	5	572	32	576	17	576	24		
577	47	577	47	577	32	577	17	577	32	577	32	572	17	577	32	577	32	576	24		
575	48	575	61	576	24	576	31	575	61	575	48	576	31	575	61	575	61	576	24		
575	48	575	30	576	17	576	24	575	48	575	61	575	30	575	48	575	61	576	24		
Chip	587	67	499	27	561	31	453	33	492	36	612	37	486	37	575	61	551	40	WHITE		

PROJ. PR. NO. 7

AMB. ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

RESPONSES

575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	551	20
575	27	577	35	576	17	576	17	612	18	612	28	551	10	575	40	575	54	492	18		
577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	20
573	10	573	21	573	21	573	21	573	21	573	10	577	8	577	53	612	4	574	15		
573	21	577	8	575	11	572	11	573	10	577	18	551	5	577	18	575	12	574	9		
573	62	573	42	573	42	577	35	573	42	573	42	573	42	573	42	573	42	573	42	551	9
577	53	577	35	577	18	577	18	577	35	577	53	577	35	575	27	575	40	488	34		
575	27	575	40	575	27	575	27	492	28	612	28	575	27	577	35	575	40	499	20		
Chip	587	67	499	27	561	31	453	33	492	36	612	37	486	37	575	61	551	40	WHITE		

PROJ. PR. NO. 8

AMB. ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

RESPONSES

573	42	573	42	573	42	573	10	573	42	573	42	573	42	577	35	573	42	574	15		
492	12	573	42	455	8	455	8	573	42	577	35	577	35	575	27	575	27	499	6		
577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	20
612	4	577	8	577	18	577	18	577	18	573	21	577	18	577	18	573	21	574	9		
577	35	577	18	551	10	574	5	577	18	573	10	574	5	575	27	577	18	551	20		
573	62	573	42	573	21	573	10	573	42	573	42	573	21	573	42	573	42	551	10		
577	35	577	35	577	35	577	18	577	18	575	27	492	15	577	35	577	53	488	12		
577	35	575	27	551	5	551	10	575	27	612	28	612	18	575	40	612	28	492	9		
Chip	587	67	499	27	561	31	453	33	492	36	612	37	486	37	575	61	551	40	WHITE		

PROJ. PR. NO. 9

AMB. ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

RESPONSES

573	21	573	21	575	5	551	5	573	21	573	21	573	21	573	21	573	21	573	21	499	3
612	18	577	35	576	17	576	17	577	35	577	18	492	5	612	18	612	28	492	13		
577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	20
492	12	576	16	455	17	455	17	612	18	612	18	573	10	612	4	612	18	492	18		
576	8	577	18	574	5	574	9	577	18	576	8	574	5	575	27	576	8	574	5		
576	17	576	17	491	12	576	17	576	17	576	17	576	17	573	42	573	21	576	8		
575	40	575	27	491	12	491	25	575	27	577	35	573	42	612	28	575	40	492	13		
612	28	575	27	491	6	491	12	575	27	612	18	576	8	575	40	612	28	576	13		
Chip	587	67	499	27	561	31	453	33	492	36	612	37	486	37	575	61	551	40	WHITE		

PROJ. PR. NO. 10

AMB. ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

RESPONSES

573	42	573	42	573	21	573	21	573	42	573	42	573	42	573	42	573	42	573	42	499	13
575	27	577	35	576	8	576	8	573	21	577	35	551	5	612	28	612	28	492	6		
577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	20
612	18	612	9	612	4	612	4	612	12	492	12	612	4	575	6	612	4	492	18		
573	21	577	18	573	10	573	21	573	10	577	18	499	6	577	18	575	12	574	9		
573	62	573	42	573	21	573	10	573	42	573	42	573	10	573	62	573	62	499	20		
575	34	575	40	576	16	576	16	577	53	575	40	576	27	577	53	577	53	492	9		
577	35	575	27	576	8	576	8	575	27	577	35	576	16	575	27	577	35	492	9		

TABLE 9

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 11	W	587	35	587	35	587	18	587	18	587	35	587	35	587	35	587	35	587	35	499	13
	ILL. W	612	28	587	35	586	8	586	17	587	35	587	53	587	27	585	40	585	40	488	12
	R-1	587	68	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	20
	R-2	583	21	492	12	612	18	586	17	492	12	492	6	492	6	492	6	492	3	492	18
	G-1	588	10	587	8	584	2	584	5	585	6	587	8	587	10	587	35	585	12	584	5
	G-2	587	53	587	35	587	18	587	8	587	35	587	35	587	8	587	35	587	35	584	15
	Y-1	585	40	587	53	587	35	587	35	585	27	585	40	585	27	587	53	585	40	488	23
	Y-2	588	42	587	35	581	5	581	10	587	35	585	27	612	18	585	27	612	18	492	9
Chip		587	67	499	27	581	31	499	33	492	36	612	37	486	37	585	61	581	40	WHITE	
PROJ. PR. No. 12	W	587	53	587	35	587	18	587	18	587	35	587	35	587	35	587	35	587	35	586	84
	ILL. W	585	36	585	27	586	17	586	17	585	27	612	18	492	12	585	27	585	27	584	9
	R-1	587	68	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	581	43
	R-2	583	21	587	18	587	18	583	42	585	30	492	12	492	12	492	6	492	12	584	15
	G-1	587	8	585	12	581	10	584	5	588	21	588	10	581	10	588	42	587	53	583	32
	G-2	587	53	587	35	587	18	587	8	587	35	587	35	587	18	587	35	587	35	581	43
	Y-1	585	40	587	53	587	35	584	8	587	35	585	40	583	62	587	35	585	40	584	9
	Y-2	612	28	585	27	492	15	586	8	585	27	612	28	612	18	612	28	585	27	584	9
Chip		587	67	499	27	581	31	499	33	492	36	612	37	486	37	585	61	581	40	WHITE	
PROJ. PR. No. 13	W	587	35	587	35	587	18	587	18	587	35	587	35	587	35	587	35	587	35	586	35
	ILL. W	612	18	585	27	586	17	586	17	585	27	612	18	492	6	612	18	612	18	584	9
	R-1	587	68	587	53	583	42	583	42	587	53	583	42	587	53	583	42	587	53	581	31
	R-2	492	19	492	12	492	25	492	25	492	12	492	19	492	22	492	6	492	6	586	35
	G-1	583	21	587	18	581	10	584	9	587	18	587	8	581	10	583	42	587	53	586	54
	G-2	587	53	587	35	586	8	587	8	587	35	587	35	587	8	585	40	587	53	586	54
	Y-1	585	40	587	53	586	8	587	18	587	53	585	40	612	18	585	40	612	28	584	9
	Y-2	585	27	612	28	492	17	492	17	585	27	612	18	586	17	585	40	612	28	584	5
Chip		587	67	499	27	581	31	499	33	492	36	612	37	486	37	585	61	581	40	WHITE	
PROJ. PR. No. 14	W	587	18	587	18	587	18	587	18	587	18	587	18	587	18	587	18	587	18	581	20
	ILL. W	612	28	585	27	586	8	586	8	587	35	612	28	586	17	585	40	612	28	581	10
	R-1	585	40	585	40	585	40	585	40	585	40	585	40	585	40	585	40	585	40	581	43
	R-2	492	12	612	18	585	30	586	8	612	18	612	9	492	12	492	3	492	3	584	9
	G-1	583	21	587	8	586	8	581	10	583	10	583	21	586	17	587	35	585	12	586	54
	G-2	587	53	587	35	587	8	587	8	583	10	587	35	585	27	587	35	587	53	581	43
	Y-1	587	53	587	68	587	35	586	1	585	27	585	40	585	27	612	28	585	40	584	9
	Y-2	612	28	585	27	587	6	587	6	585	27	612	28	586	16	612	18	585	27	584	5
Chip		587	67	499	27	581	31	499	33	492	36	612	37	486	37	585	61	581	40	WHITE	
PROJ. PR. No. 15	W	587	35	587	35	587	35	587	18	587	18	587	35	587	35	587	35	587	35	581	20
	ILL. W	612	28	587	35	583	42	581	10	587	35	612	28	585	27	585	40	612	28	499	6
	R-1	585	40	585	40	583	21	585	40	585	40	585	40	585	40	585	40	587	35	581	43
	R-2	492	19	612	28	612	18	612	9	612	28	492	19	492	12	612	4	612	4	581	31
	G-1	587	8	585	12	586	8	581	10	587	18	587	8	581	5	587	35	587	18	586	54
	G-2	583	21	583	42	583	21	583	21	587	35	587	35	583	42	587	53	587	53	581	43
	Y-1	585	40	587	53	586	8	586	8	585	27	612	28	612	18	585	27	612	28	584	9
	Y-2	585	27	612	18	581	5	581	5	612	18	585	27	586	16	585	40	585	27	499	13

TABLE 10

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 16	W	595	12	595	11	595	11	595	11	595	12	595	11	595	11	595	11	595	11	595	30
	ILL. W	583	10	455	8	455	17	455	17	583	21	583	10	455	8	583	42	455	4	583	10
	R-1	595	54	595	40	595	27	595	12	595	27	595	27	595	27	595	53	595	54	595	10
	R-2	492	12	455	17	478	22	478	22	492	15	492	6	478	11	492	6	492	6	595	32
	G-1	478	5	481	6	478	5	595	11	566	4	478	7	595	8	583	21	531	10	583	62
	G-2	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	21	531	10	595	48
	Y-1	595	12	612	18	531	5	531	5	595	27	612	18	566	24	612	18	612	18	595	10
	Y-2	566	8	566	17	478	22	478	22	566	17	566	24	455	17	566	24	566	17	595	11
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	595	61	531	40	595	11
	RESPONSES	595	12	595	11	595	11	595	11	595	12	595	11	595	11	595	11	595	11	595	30
PROJ. PR. NO. 17	W	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	32
	ILL. W	566	8	595	11	455	17	455	17	455	17	455	8	455	17	583	10	455	8	566	8
	R-1	595	53	595	53	595	35	595	35	595	53	595	35	595	35	595	35	595	53	595	32
	R-2	492	12	492	15	492	12	492	12	492	6	492	4	492	6	492	12	492	12	595	32
	G-1	478	5	455	4	595	10	595	11	566	4	478	5	583	21	595	10	531	5	595	78
	G-2	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	30
	Y-1	595	35	595	27	566	8	566	8	595	27	612	18	595	27	612	18	492	12	566	8
	Y-2	583	21	583	18	455	17	455	17	583	21	583	18	583	21	583	42	583	18	595	32
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	595	61	531	40	595	11
	RESPONSES	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	32
PROJ. PR. NO. 18	W	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	32
	ILL. W	583	10	455	8	566	4	455	17	455	17	583	21	583	21	455	4	583	10	566	8
	R-1	595	54	595	40	595	40	595	27	595	40	595	40	595	27	595	40	595	40	595	31
	R-2	492	6	583	18	583	8	583	8	478	11	492	12	492	11	492	4	531	10	595	20
	G-1	566	4	566	4	583	10	595	11	455	4	492	4	531	5	566	4	531	10	583	62
	G-2	595	11	595	40	595	11	595	11	595	11	595	11	595	12	595	11	595	11	595	47
	Y-1	583	10	595	27	595	16	595	16	612	18	595	27	612	18	612	18	612	18	566	17
	Y-2	583	21	566	17	455	17	455	17	566	17	566	24	566	24	566	24	566	24	566	5
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	595	61	531	40	595	11
	RESPONSES	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	11	595	32
PROJ. PR. NO. 19	W	595	6	595	12	595	12	595	12	595	27	595	27	595	12	595	12	595	6	595	54
	ILL. W	455	4	455	8	455	17	455	17	455	8	455	4	455	17	455	4	—	—	612	46
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	54
	R-2	583	10	492	12	492	24	492	24	583	21	492	12	492	10	492	6	492	6	612	39
	G-1	478	7	492	9	612	9	612	9	478	11	478	7	514	2	514	5	492	12	595	54
	G-2	595	6	595	8	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	54
	Y-1	566	8	455	17	566	17	566	17	566	17	595	27	566	17	—	—	455	8	595	54
	Y-2	566	4	455	8	595	6	595	6	566	17	455	8	455	17	583	10	—	—	595	54
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	595	61	531	40	595	11
	RESPONSES	595	6	595	12	595	12	595	12	595	27	595	27	595	12	595	12	595	6	595	54
PROJ. PR. NO. 20	W	595	6	595	12	595	12	595	27	595	12	595	12	595	12	595	6	595	6	595	40
	ILL. W	478	5	455	8	455	17	455	17	478	22	478	5	478	22	478	11	478	5	595	27
	R-1	595	35	595	35	595	53	595	53	595	35	595	35	595	27	595	11	595	35	595	18
	R-2	492	22	492	24	595	35	595	35	478	22	492	11	583	10	478	11	478	11	612	18
	G-1	478	13	492	24	595	12	595	12	566	8	492	9	595	35	478	11	492	12	595	54
	G-2	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	40
	Y-1	455	8	455	17	566	24	566	4	478	11	566	24	455	17	478	25	478	25	595	27
	Y-2	478	22	478	24	566	24	566	31	478	24	478	11	566	24	478	24	478	24	595	27
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	595	61	531	40	595	11
	RESPONSES	595	6	595	12	595	12	595	27	595	12	595	12	595	12	595	6	595	6	595	40

TABLE //

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	ILL. W	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	R-1	571 18	571 18	571 18	571 18	571 18	571 18	571 18	571 18	571 18	571 18
	R-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	G-1	571 5	571 5	571 5	571 5	571 5	571 5	571 5	571 5	571 5	571 5
	G-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	Y-1	571 18	571 18	571 18	571 18	571 18	571 18	571 18	571 18	571 18	571 18
	Y-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
Chip		507 67	499 27	501 31	499 33	499 36	612 37	406 37	573 61	571 40	WHITE
PROJ. PR. No. 22	ILL. W	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	R-1	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	R-2	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	G-1	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	G-2	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	Y-1	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	Y-2	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
Chip		507 67	499 27	501 31	499 33	499 36	612 37	406 37	573 61	571 40	WHITE
PROJ. PR. No. 23	ILL. W	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	R-1	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	R-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	G-1	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	G-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	Y-1	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	Y-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
Chip		507 67	499 27	501 31	499 33	499 36	612 37	406 37	573 61	571 40	WHITE
PROJ. PR. No. 24	ILL. W	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	R-1	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	R-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	G-1	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	G-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	Y-1	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
	Y-2	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10	573 10
Chip		507 67	499 27	501 31	499 33	499 36	612 37	406 37	573 61	571 40	WHITE
PROJ. PR. No. 25	ILL. W	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	R-1	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	R-2	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	G-1	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	G-2	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	Y-1	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11
	Y-2	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11

TABLE /2

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair

Wave Lengths (X) and Excitation Filter (Y) - All Lowband Blue Filter																						
		1		2		3		4		5		6		7		8		9		back		
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	
PROJ. PR. No. 26																						
AMB. ILL. W		536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	8	
R-1		535	27	541	8	478	11	478	22	539	21	453	17	478	11	537	18	478	11	535	6	
R-2		535	40	535	40	535	27	535	11	535	27	535	27	535	27	535	40	535	40	535	32	
G-1		535	27	533	42	478	11	478	11	533	16	535	27	478	11	537	18	535	18	534	5	
G-2		536	8	533	10	478	24	478	12	536	6	534	8	537	10	536	21	536	5	533	42	
Y-1		536	4	536	4	536	4	478	22	536	4	536	4	536	4	536	4	536	4	536	4	
Y-2		535	42	535	35	478	12	478	27	535	21	535	12	536	24	537	18	535	21	478	6	
Chip		507	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE		
PROJ. PR. No. 27																						
AMB. ILL. W		536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	
R-1		535	21	535	18	478	11	478	22	453	4	536	4	478	11	536	21	535	35	536	4	
R-2		535	53	535	45	535	42	535	42	535	42	535	42	535	42	535	52	535	52	535	20	
G-1		535	27	535	40	478	12	478	12	478	6	535	12	478	11	478	5	478	5	535	5	
G-2		535	5	536	12	535	10	535	11	535	10	535	5	536	8	535	21	536	8	535	35	
Y-1		536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	
Y-2		535	42	535	12	478	12	478	12	535	42	535	15	536	16	535	35	535	35	478	9	
Chip		507	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE		
PROJ. PR. No.																						
AMB. ILL. W																						
R-1																						
R-2																						
G-1																						
G-2																						
Y-1																						
Y-2																						
Chip		507	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE		
PROJ. PR. No.																						
AMB. ILL. W																						
R-1																						
R-2																						
G-1																						
G-2																						
Y-1																						
Y-2																						
Chip		507	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE		

TABLE / 3

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 1	W	572	47	572	47	572	32	572	17	572	32	572	32	572	32	572	47	572	32	455	24
	ILL. W	575	48	575	30	566	17	566	17	532	16	572	47	532	16	575	48	572	60	478	22
	R-1	575	61	575	62	572	62	577	53	577	53	577	53	577	53	575	62	577	53	455	24
	R-2	566	4	572	21	578	11	478	11	573	21	575	11	455	17	575	30	573	21	572	32
	G-1	572	32	572	47	575	11	481	6	572	32	572	47	478	5	572	47	575	30	478	32
	G-2	575	48	575	30	575	30	575	18	575	30	575	30	575	30	575	48	575	30	455	31
	Y-1	575	61	575	48	478	22	572	16	575	48	575	30	478	22	575	48	575	48	572	24
	Y-2	575	61	575	30	572	16	572	24	575	30	575	18	572	24	575	61	575	61	455	24
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	551	40	WHITE	
	RESPONSES	572	47	575	30	575	30	575	18	575	30	575	30	575	30	572	47	575	30	455	24
PROJ. PR. NO. 2	W	572	47	575	30	575	30	575	18	575	30	575	30	575	30	572	47	575	30	455	24
	ILL. W	575	61	575	48	566	17	566	17	566	24	575	30	575	30	572	60	575	61	455	17
	R-1	577	53	577	53	577	53	478	15	577	53	577	53	577	53	572	47	577	53	478	32
	R-2	575	11	573	21	455	8	455	8	455	4	575	11	566	17	575	30	573	21	455	31
	G-1	572	47	572	32	478	7	478	7	572	19	575	30	478	5	572	47	575	30	478	22
	G-2	575	48	573	42	573	42	573	42	573	42	573	42	573	42	572	47	573	42	455	24
	Y-1	575	48	478	22	572	24	572	24	575	30	575	18	572	24	575	61	575	30	566	17
	Y-2	575	61	575	48	572	24	572	24	575	48	575	61	572	24	572	60	575	60	455	24
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	551	40	WHITE	
	RESPONSES	572	47	575	30	575	18	575	18	575	18	575	30	575	18	572	47	575	30	566	24
PROJ. PR. NO. 3	W	572	47	575	30	575	18	575	18	575	18	575	30	575	18	572	47	575	30	566	24
	ILL. W	575	48	572	47	566	17	566	17	575	30	572	32	566	17	572	60	575	48	566	17
	R-1	577	53	478	19	478	22	478	22	478	19	478	19	575	11	575	48	577	53	455	24
	R-2	575	30	572	42	455	24	455	24	575	11	575	30	455	17	572	32	572	17	566	31
	G-1	566	25	577	10	572	5	478	24	577	10	566	17	577	10	572	47	577	10	572	24
	G-2	575	30	575	18	572	17	575	11	575	11	575	11	575	11	572	47	575	18	566	31
	Y-1	575	48	575	30	566	24	566	24	575	30	575	48	566	24	575	61	575	48	566	24
	Y-2	575	61	575	48	455	17	455	24	575	61	575	61	455	17	572	60	575	60	566	24
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	551	40	WHITE	
	RESPONSES	572	47	572	17	572	17	572	17	572	17	572	17	572	17	572	47	572	17	566	24
PROJ. PR. NO. 4	W	572	47	572	17	572	17	572	17	572	17	572	17	572	17	572	47	572	17	566	24
	ILL. W	575	48	566	17	566	8	455	8	455	17	455	24	455	17	575	61	572	47	566	31
	R-1	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	478	30
	R-2	575	27	575	40	575	6	575	6	573	21	575	27	478	5	575	12	575	12	532	22
	G-1	572	30	571	10	574	5	478	13	566	8	572	17	574	2	572	47	572	35	478	22
	G-2	572	47	572	32	572	17	572	11	572	32	572	32	572	17	572	47	572	17	572	32
	Y-1	575	61	572	60	572	47	455	24	575	30	575	61	455	17	575	61	572	60	566	31
	Y-2	575	61	572	47	572	82	455	17	572	47	572	60	455	17	575	61	572	60	566	31
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	551	40	WHITE	
	RESPONSES	572	47	572	32	572	17	572	17	572	32	572	17	572	32	572	47	572	32	566	24
PROJ. PR. NO. 5	W	572	47	572	32	572	17	572	17	572	32	572	17	572	32	572	47	572	32	566	24
	ILL. W	575	48	575	30	455	8	455	4	575	30	572	47	572	32	575	30	575	30	566	31
	R-1	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	478	30
	R-2	575	27	575	27	577	8	577	8	572	17	575	30	575	6	575	18	575	18	566	31
	G-1	572	32	566	8	551	5	478	6	566	8	572	32	551	10	572	47	566	17	572	24
	G-2	572	47	572	32	572	17	572	17	572	17	572	32	572	32	572	47	572	32	572	32
	Y-1	575	61	575	48	575	30	577	30	575	30	575	61	575	30	575	61	575	48	572	32
	Y-2	572	60	572	47	572	32	572	32	572	47	572	60	572	32	572	60	572	60	566	31
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	406	37	575	61	551	40	WHITE	
	RESPONSES	572	47	572	32	572	17	572	17	572	32	572	17	572	32	572	47	572	32	566	24

TABLE 14Wavelength (λ) and Excitation Purity (P_e): Narrowband Slide Pair 3

1	2	3	4	5	6	7	8	9	back
λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe

PROJ. PR. No.	AMB. ILL. R-R-Z	RESPONSES
6	R-1	570 47 575 30 570 32 570 17 570 32 570 32 570 17 570 32 570 32 455 24
	R-2	575 48 575 30 455 8 453 17 575 48 575 61 453 17 575 61 570 47 566 24
	G-1	577 53 577 53 577 53 577 53 577 53 577 53 575 61 577 53 455 24
	G-2	575 30 575 30 481 24 481 24 575 18 575 30 455 24 575 30 575 18 455 31
	Y-1	570 32 570 17 514 2 514 5 551 10 570 32 536 8 575 48 566 17 566 24
	Y-2	570 41 575 32 570 17 570 11 575 18 570 17 570 11 570 47 570 32 566 24
	Chip	575 61 575 48 536 24 536 24 575 48 575 61 575 30 575 61 575 48 536 24
		570 60 570 47 570 32 570 17 570 47 570 32 455 31 570 60 570 60 566 31
		587 67 499 27 5610 31 455 33 492 36 612 31 486 37 575 61 551 40 575

Chip

[illegible]

Chip

PROJ. PR. NO. 8

AMB. ILL.	W	M	R-1	R-2	G-1	G-2	Y-1	Y-2
RESPONSES	583 21	589 21	584 21	583 21	589 21	589 21	589 21	589 21
	583 27	583 42	455 8	455 8	586 16	495 27	579 18	583 21
	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53
	492 12	585 27	587 18	587 18	492 6	492 6	583 42	583 62
	585 12	551 10	584 5	584 9	585 6	585 6	581 20	585 40
	583 62	583 42	583 21	583 10	583 42	583 62	583 21	583 42
	585 27	587 35	583 42	583 21	583 27	587 35	583 62	583 21
	587 35	585 27	585 17	583 42	585 27	585 16	583 47	585 40
Chip	587 67	499 27	581 31	493 33	492 36	612 37	486 37	573 61

Chip

[illegible]

Chip

PROJ. PR. NO. / 8	ARMY ILL. NO. / 8	RESPONSE
Y-1	Y-1	583 40 583 21 583 10 583 5 583 10 583 35 583 21 583 10 583 42 583 5
Y-2	Y-2	585 27 585 5 586 8 586 8 587 35 585 27 586 8 585 27 585 12 586 12
Y-1	Y-1	585 40 585 40 585 40 585 40 585 40 585 40 585 40 585 40 585 21
Y-2	Y-2	585 12 585 12 585 12 585 12 585 12 585 12 585 12 585 12 585 12
Y-1	Y-1	587 63 587 35 587 42 587 42 587 42 587 42 587 42 587 42 587 42
Y-2	Y-2	587 35 587 35 587 35 587 35 587 35 587 35 587 35 587 35 587 35

1

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

[illegible]

TABLE 16

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16	AMB. ILL. W	575	21	575	21	575	10	575	10	575	10	575	10	575	11	575	42	575	10	575	30
	AMB. ILL. R-1	455	4	461	24	461	24	461	6	575	12	461	24	575	27	575	27	575	8	575	10
	AMB. ILL. R-2	575	24	575	40	575	27	575	12	575	27	575	27	575	24	575	40	575	40	575	47
	AMB. ILL. G-1	575	27	455	17	455	24	455	24	575	18	575	12	478	22	575	12	575	6	575	30
	AMB. ILL. G-2	575	6	575	8	575	10	575	11	455	8	612	4	575	21	575	42	478	3	575	78
	AMB. ILL. Y-1	575	10	455	17	575	10	575	10	575	10	575	10	575	10	575	53	575	10	575	48
	AMB. ILL. Y-2	575	21	575	27	478	11	478	24	575	21	455	17	575	17	478	19	575	8	575	21
Chip		575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10
PROJ. PR. No. 17	AMB. ILL. W	575	42	575	42	575	21	575	11	575	10	575	21	575	10	575	42	575	10	575	32
	AMB. ILL. R-1	575	12	478	5	478	12	478	12	478	22	612	28	478	11	612	9	478	5	575	8
	AMB. ILL. R-2	575	27	478	27	478	22	478	12	575	27	612	15	575	17	575	12	575	12	575	35
	AMB. ILL. G-1	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. G-2	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. Y-1	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. Y-2	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
Chip		575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
PROJ. PR. No. 18	AMB. ILL. W	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. R-1	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. R-2	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. G-1	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. G-2	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. Y-1	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
	AMB. ILL. Y-2	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
Chip		575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	30
PROJ. PR. No. 19	AMB. ILL. W	575	12	575	4	575	12	575	27	575	12	575	12	575	2	575	12	575	12	575	54
	AMB. ILL. R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	54
	AMB. ILL. R-2	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	54
	AMB. ILL. G-1	575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	54
	AMB. ILL. G-2	575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	54
	AMB. ILL. Y-1	575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	54
	AMB. ILL. Y-2	575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	54
Chip		575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	54
PROJ. PR. No. 20	AMB. ILL. W	575	6	575	12	575	27	575	27	575	12	575	12	575	12	575	6	575	6	575	27
	AMB. ILL. R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27
	AMB. ILL. R-2	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27
	AMB. ILL. G-1	575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	27
	AMB. ILL. G-2	575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	27
	AMB. ILL. Y-1	575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	27
	AMB. ILL. Y-2	575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	27
Chip		575	21	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	27

TABLE /7

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	R-1	478	22	455	4	566	8	566	8	478	5	455	4	587	18	455	17	455	4	595	6
	R-2	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21
	G-1	478	5	486	3	585	12	585	12	587	18	587	8	585	6	486	13	585	11	585	12
	G-2	514	2	514	2	513	13	511	18	481	6	411	6	587	18	499	6	499	3	587	35
	Y-1	496	4	496	4	496	4	496	4	496	4	496	4	496	4	496	4	496	4	496	4
	Y-2	455	8	566	8	566	17	566	24	478	11	566	31	486	13	486	8	486	8	486	8
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 22	W	572	11	575	11	572	32	572	32	572	17	572	11	572	17	572	11	572	11	566	8
	R-1	583	42	587	35	575	30	575	30	583	42	587	35	575	30	455	31	583	42	455	4
	R-2	587	53	587	53	583	62	575	48	575	62	575	27	583	62	586	8	587	53	466	25
	G-1	455	24	455	31	455	24	575	30	478	11	455	8	575	18	455	24	575	11	491	24
	G-2	481	6	566	8	572	17	572	32	572	17	572	17	575	30	478	22	566	35	566	16
	Y-1	572	11	572	11	572	17	572	32	572	17	572	17	572	17	572	11	575	18	566	17
	Y-2	583	62	575	48	583	75	583	75	583	62	583	42	583	62	586	31	583	42	586	17
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 23	W	583	10	583	10	583	21	583	21	583	21	583	21	583	21	583	10	583	21	499	6
	R-1	583	42	587	35	575	18	583	42	587	8	587	35	587	35	455	24	583	42	487	12
	R-2	585	40	585	40	587	53	583	62	587	53	585	40	587	53	586	16	587	53	574	15
	G-1	455	8	455	8	478	22	478	22	483	42	583	21	572	17	481	24	572	11	499	13
	G-2	514	2	583	10	583	21	583	21	583	21	585	6	587	35	499	13	587	8	572	17
	Y-1	514	2	514	2	514	2	514	2	514	2	514	2	514	2	514	2	514	2	514	2
	Y-2	587	35	587	35	585	27	585	27	583	42	587	35	585	27	586	31	583	42	487	6
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 24	W	583	21	583	21	583	21	583	21	587	35	583	21	583	21	583	21	583	21	583	21
	R-1	587	18	587	35	583	42	583	42	583	21	587	18	583	42	487	12	583	21	492	3
	R-2	585	40	585	40	587	53	587	53	585	40	587	53	585	40	587	53	585	40	574	15
	G-1	587	12	585	10	585	27	585	27	585	15	587	8	583	21	575	30	583	21	499	13
	G-2	481	12	455	8	566	8	572	17	572	32	583	10	587	18	499	13	583	10	572	32
	Y-1	587	35	583	10	583	10	583	10	583	10	583	10	583	10	586	8	583	10	566	35
	Y-2	587	35	587	35	585	27	585	27	583	42	587	35	585	27	583	62	612	18	499	3
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 25	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11
	R-1	587	8	587	18	583	42	583	42	587	18	587	8	587	18	583	21	587	18	572	8
	R-2	587	53	587	53	583	62	583	62	587	53	587	53	583	62	583	42	587	53	586	24
	G-1	585	12	585	27	585	27	455	4	478	11	612	9	583	10	575	18	583	21	581	20
	G-2	486	6	486	6	455	8	455	17	566	4	478	11	486	7	583	21	587	8	583	42
	Y-1	583	42	587	35	585	27	612	18	583	42	585	27	586	24	583	42	612	18	583	42
	Y-2	587	35	586	17	455	8	455	17	566	17	587	35	586	24	581	5	566	24	492	3

TABLE 18

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 26	AMB. ILL. W	561	4	561	4	561	4	561	4	587	35
	ILL. R-1	455	4	478	5	478	22	481	12	481	6
	ILL. R-2	587	53	612	4	583	42	583	42	587	53
	AMB. G-1	478	12	612	18	566	17	566	17	612	9
	AMB. G-2	472	3	479	3	479	6	486	25	481	6
	Y-1	612	4	612	4	612	4	612	4	612	4
	Y-2	583	42	561	17	486	25	486	25	481	6
	Chip	587	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 27	AMB. ILL. W	561	4	561	4	561	4	561	4	587	35
	ILL. R-1	455	4	478	5	478	22	481	12	481	6
	ILL. R-2	587	53	612	4	583	42	583	42	587	53
	AMB. G-1	478	12	612	18	566	17	566	17	612	9
	AMB. G-2	472	3	479	3	479	6	486	25	481	6
	Y-1	612	4	612	4	612	4	612	4	612	4
	Y-2	583	42	561	17	486	25	486	25	481	6
	Chip	587	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 28	AMB. ILL. W	561	4	561	4	561	4	561	4	587	35
	ILL. R-1	455	4	478	5	478	22	481	12	481	6
	ILL. R-2	587	53	612	4	583	42	583	42	587	53
	AMB. G-1	478	12	612	18	566	17	566	17	612	9
	AMB. G-2	472	3	479	3	479	6	486	25	481	6
	Y-1	612	4	612	4	612	4	612	4	612	4
	Y-2	583	42	561	17	486	25	486	25	481	6
	Chip	587	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 29	AMB. ILL. W	561	4	561	4	561	4	561	4	587	35
	ILL. R-1	455	4	478	5	478	22	481	12	481	6
	ILL. R-2	587	53	612	4	583	42	583	42	587	53
	AMB. G-1	478	12	612	18	566	17	566	17	612	9
	AMB. G-2	472	3	479	3	479	6	486	25	481	6
	Y-1	612	4	612	4	612	4	612	4	612	4
	Y-2	583	42	561	17	486	25	486	25	481	6
	Chip	587	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 30	AMB. ILL. W	561	4	561	4	561	4	561	4	587	35
	ILL. R-1	455	4	478	5	478	22	481	12	481	6
	ILL. R-2	587	53	612	4	583	42	583	42	587	53
	AMB. G-1	478	12	612	18	566	17	566	17	612	9
	AMB. G-2	472	3	479	3	479	6	486	25	481	6
	Y-1	612	4	612	4	612	4	612	4	612	4
	Y-2	583	42	561	17	486	25	486	25	481	6
	Chip	587	67	499	27	561	31	455	33	492	36

TABLE 19

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	ILL. W	575	48	575	30	575	16	575	17	575	30	575	30	575	42	572	47	575	30	481	36
	R-1	575	41	575	16	575	18	575	16	575	8	575	48	575	24	572	60	575	27	481	24
	R-2	575	62	575	53	612	28	612	28	575	53	575	61	612	28	575	48	575	40	486	37
	G-1	572	32	575	8	575	17	575	17	575	16	572	32	575	17	572	47	575	8	481	36
	G-2	572	17	575	21	481	12	481	8	575	12	572	17	481	15	572	47	575	42	478	32
	Y-1	575	48	575	42	575	42	575	42	575	62	575	48	575	62	575	30	575	62	481	36
	Y-2	575	61	575	68	481	19	481	26	575	54	575	48	575	64	572	60	575	48	478	32
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 2	ILL. W	575	48	575	30	575	16	575	17	575	30	575	30	575	42	572	47	575	30	481	36
	R-1	575	47	575	42	575	16	575	24	575	16	575	24	575	24	572	60	575	16	481	24
	R-2	575	53	481	19	481	22	481	22	481	19	575	53	481	22	572	60	481	22	486	37
	G-1	572	32	481	17	575	17	575	17	575	8	572	32	575	17	572	47	575	17	481	24
	G-2	575	30	481	5	575	17	575	24	612	9	572	32	575	16	572	60	575	31	486	25
	Y-1	575	48	575	53	575	35	575	35	575	35	575	53	575	53	572	60	575	42	486	37
	Y-2	575	61	575	40	575	24	575	31	575	40	575	48	575	31	572	60	575	40	478	32
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 3	ILL. W	575	30	575	42	575	16	575	17	575	30	575	30	575	42	572	47	575	30	481	36
	R-1	575	47	575	32	481	24	481	24	481	17	575	32	481	17	572	60	575	17	481	24
	R-2	575	40	481	19	481	30	481	30	481	30	575	40	481	19	575	48	481	19	486	35
	G-1	575	48	575	17	575	24	575	24	575	18	572	47	575	17	575	48	575	32	575	16
	G-2	575	17	575	10	481	12	481	22	481	22	575	18	481	12	575	48	575	17	481	15
	Y-1	575	30	575	42	575	21	575	21	575	21	575	18	575	21	572	47	575	21	575	16
	Y-2	575	61	575	30	575	24	575	31	575	17	575	48	575	31	572	60	575	30	575	17
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 4	ILL. W	575	47	575	17	575	17	575	17	575	17	575	17	575	17	575	48	575	17	575	17
	R-1	575	48	481	19	481	24	481	24	481	17	575	30	481	17	572	60	481	17	575	17
	R-2	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40
	G-1	481	15	575	16	575	8	575	8	481	5	481	15	481	8	612	37	575	16	575	24
	G-2	575	30	481	6	481	11	481	22	575	10	572	32	575	5	575	48	575	10	481	26
	Y-1	575	48	575	17	575	17	575	17	575	17	575	30	575	17	575	48	575	17	481	22
	Y-2	575	54	575	24	481	17	481	24	575	30	575	61	481	24	575	54	481	17	575	32
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 5	ILL. W	575	32	575	17	575	17	575	17	575	17	575	17	575	17	575	48	575	17	575	17
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40
	R-2	575	40	575	12	575	6	575	6	575	6	575	27	575	12	575	27	575	12	575	32
	G-1	572	17	575	8	575	2	481	12	575	10	572	17	575	8	575	30	575	17	575	24
	G-2	572	17	575	32	575	17	575	17	575	17	572	32	575	17	572	47	575	17	575	24
	Y-1	575	61	575	48	575	17	481	17	575	30	575	61	575	30	575	54	575	61	575	31
	Y-2	575	61	575	48	575	24	481	24	575	48	575	61	575	30	575	54	575	48	575	32

TABLE 20

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

	1	2	3	4	5	6	7	8	9	back
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 6										
AMB. ILL. RESPONSES										
R-1	572	17	572	17	572	11	572	11	572	17
R-2	575	48	478	22	455	17	455	34	575	30
G-1	573	62	577	53	492	19	492	19	612	28
G-2	577	32	572	17	478	22	478	22	577	53
Y-1	572	17	551	5	481	12	481	12	492	9
Y-2	575	30	575	18	575	11	575	11	575	30
Chip	575	61	575	48	566	34	566	31	575	48
	575	61	575	48	566	31	566	31	575	48
	587	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 7										
AMB. ILL. RESPONSES										
R-1	481	24	481	24	481	24	481	24	481	24
R-2	551	20	577	53	551	20	551	20	577	35
G-1	575	40	575	40	575	40	575	40	575	40
G-2	574	2	551	5	574	5	574	5	574	2
Y-1	573	10	577	18	575	11	499	3	573	10
Y-2	573	62	573	78	573	62	573	42	573	42
Chip	577	53	575	40	577	35	577	35	575	40
	575	27	577	35	575	27	612	18	612	28
	587	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 8										
AMB. ILL. RESPONSES										
R-1	577	35	577	35	577	35	577	35	577	35
R-2	575	27	577	35	575	17	575	16	575	27
G-1	575	40	575	40	575	40	575	40	575	40
G-2	575	27	575	40	575	12	575	12	575	21
Y-1	575	12	551	10	551	5	551	20	574	5
Y-2	573	62	573	42	573	42	573	11	573	21
Chip	577	53	575	40	577	35	577	35	575	27
	575	27	577	35	575	17	577	35	575	27
	587	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 9										
AMB. ILL. RESPONSES										
R-1	573	21	566	8	566	8	566	8	573	10
R-2	577	35	455	24	477	36	455	17	566	17
G-1	575	40	575	40	575	40	575	40	575	40
G-2	612	18	612	9	481	24	481	24	455	17
Y-1	575	12	551	10	574	5	499	13	499	13
Y-2	573	10	551	5	551	10	551	10	573	10
Chip	577	53	566	17	486	25	486	37	486	25
	575	12	566	25	486	37	486	25	486	17
	587	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 10										
AMB. ILL. RESPONSES										
R-1	573	21	566	8	566	8	566	8	573	10
R-2	577	35	455	24	477	36	455	17	566	17
G-1	575	40	575	40	575	40	575	40	575	40
G-2	612	18	612	9	481	24	481	24	455	17
Y-1	575	12	551	10	574	5	499	13	499	13
Y-2	573	10	551	5	551	10	551	10	573	10
Chip	577	53	566	17	486	25	486	37	486	25
	575	12	566	25	486	37	486	25	486	17
	587	67	499	27	561	31	455	33	492	36

TABLE 2/

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 11	W	583	21	583	10	583	10	583	10	583	21	583	21	583	42	583	42	583	42	583	9
	ILL. W	587	35	587	17	455	17	455	17	455	8	566	8	455	4	583	62	583	42	488	12
	R-1	585	40	585	40	585	40	585	40	585	40	585	40	585	40	585	40	585	40	585	20
	R-2	585	27	585	40	486	7	486	7	583	21	583	42	585	12	585	30	585	6	499	13
	G-1	583	21	551	5	551	10	514	9	551	5	583	21	551	10	583	62	551	10	551	20
	G-2	583	62	583	42	583	21	583	10	583	21	583	42	583	21	585	48	583	42	499	6
	Y-1	587	53	583	62	583	42	583	42	587	35	583	42	587	35	583	62	583	42	486	13
	Y-2	585	40	585	27	481	12	481	24	585	27	587	35	587	18	587	68	585	27	486	25
Chip		587	67	499	27	561	31	495	33	492	36	612	37	486	37	575	61	551	40	MISS	
PROJ. PR. NO. 12	W	583	21	583	42	583	21	583	21	583	42	583	21	585	48	583	42	583	42	583	35
	ILL. W	585	27	587	35	455	8	455	17	455	8	585	27	566	17	583	62	583	42	583	9
	R-1	492	19	492	19	492	19	492	19	492	19	492	19	492	19	492	22	492	19	514	20
	R-2	612	18	585	27	583	21	583	21	583	21	583	21	583	21	587	35	583	42	583	15
	G-1	583	21	583	4	566	8	583	5	583	5	587	18	551	10	583	62	583	42	583	60
	G-2	587	53	587	35	587	18	587	18	587	18	587	35	587	18	585	61	587	53	583	58
	Y-1	587	35	583	42	583	24	583	24	583	42	587	35	583	42	583	42	583	42	583	9
	Y-2	585	40	585	27	583	21	455	17	612	18	695	27	583	4	587	68	612	18	514	9
Chip		587	67	499	27	561	31	495	33	492	36	612	37	486	37	575	61	551	40	MISS	
PROJ. PR. NO. 13	W	583	62	583	21	583	10	551	20	583	10	583	21	551	10	587	53	551	5	583	17
	ILL. W	585	40	455	17	486	13	486	25	486	18	612	18	486	25	585	54	486	24	551	5
	R-1	612	28	612	28	612	28	612	28	612	28	612	28	612	28	587	53	612	28	551	31
	R-2	614	15	492	12	486	25	486	25	486	12	492	12	566	8	612	28	612	18	551	10
	G-1	587	18	587	9	499	6	499	13	587	9	585	12	587	9	585	54	551	10	585	48
	G-2	583	62	583	10	583	10	551	20	551	5	583	42	551	10	585	40	583	42	583	32
	Y-1	585	40	587	53	486	6	486	12	486	13	587	53	486	24	585	54	587	35	551	10
	Y-2	585	27	583	24	492	13	492	20	583	16	612	37	492	13	585	54	583	24	551	20
Chip		587	67	499	27	561	31	495	33	492	36	612	37	486	37	575	61	551	40	MISS	
PROJ. PR. NO. 14	W	583	62	583	42	583	10	583	10	583	42	583	42	583	10	583	42	583	42	583	35
	ILL. W	612	18	585	27	486	6	486	12	612	18	486	12	612	37	612	18	612	18	499	6
	R-1	585	58	585	40	585	27	585	12	585	27	585	40	585	27	587	68	585	40	551	43
	R-2	492	12	585	27	566	8	566	8	551	5	492	3	514	5	612	21	612	18	551	20
	G-1	585	12	587	5	492	9	492	13	587	5	587	18	551	20	587	68	612	4	583	47
	G-2	583	62	583	10	583	10	566	35	566	8	583	42	566	35	585	40	583	42	583	21
	Y-1	585	40	612	28	566	8	566	17	583	42	585	40	566	24	585	54	612	28	587	9
	Y-2	585	40	612	28	583	16	566	35	566	17	612	28	566	17	612	46	612	28	566	35
Chip		587	67	499	27	561	31	495	33	492	36	612	37	486	37	575	61	551	40	MISS	
PROJ. PR. NO. 15	W	583	62	583	42	583	21	583	21	583	42	583	21	583	42	583	42	583	42	583	31
	ILL. W	585	27	587	35	492	3	492	3	587	35	455	8	583	24	612	18	587	35	587	5
	R-1	585	40	585	40	585	27	585	27	585	40	585	40	585	27	585	27	585	27	585	20
	R-2	612	18	587	18	27	35	583	21	587	18	713	21	583	42	587	35	585	6	587	9
	G-1	587	18	551	5	551	10	587	9	587	5	585	12	551	10	585	40	612	4	583	47
	G-2	583	62	583	42	583	10	583	10	583	42	583	62	583	42	585	40	583	42	583	34
	Y-1	585	40	612	28	492	15	492	15	583	62	583	40	612	28	583	40	612	28	587	9
	Y-2	612	28	585	27	566	8	566	17	612	18	585	40	566	17	585	31	612	28	587	15

TABLE 22

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

Wavelength (Å) and Excitation Source (W)																					
1		2		3		4		5		6		7		8		9		back			
λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe		
PROJ. PR. NO. 16																					
RESPONSES		583 42 583 21 583 21 583 10 583 21 583 12 583 21 583 62 583 10 583 42																			
ILL. W		583 5 583 9 583 15 583 9 485 8 583 15 612 18 583 9 583 10																			
R-1		583 58 583 40 583 27 583 12 583 40 583 40 583 12 583 53 583 40 583 32																			
R-2		583 12 583 8 486 22 486 22 486 22 612 9 486 25 583 40 583 13 583 42																			
G-1		583 4 583 10 583 18 583 5 583 5 583 18 583 10 583 53 583 5 583 28																			
G-2		583 42 583 10 583 10 583 10 583 10 583 62 583 10 583 54 583 10 583 62																			
Y-1		612 18 486 9 583 5 583 5 583 2 583 24 583 15 583 26 583 2 583 8																			
Y-2		583 24 486 12 486 6 486 13 486 18 583 24 486 20 583 32 486 12 583 8																			
Chip		583 67 486 27 583 31 486 33 486 36 612 37 486 37 583 61 583 40 583 40																			
PROJ. PR. NO. 17																					
RESPONSES		583 21 583 10 583 10 583 11 583 10 583 21 583 10 583 62 583 10 583 30																			
ILL. W		486 4 486 5 486 13 486 25 486 12 486 4 486 6 583 24 486 13 583 10																			
R-1		583 58 583 40 583 27 583 27 583 40 583 40 583 24 583 53 583 40 583 47																			
R-2		612 18 583 8 486 6 486 12 486 22 612 9 486 11 612 4 583 8 583 30																			
G-1		486 7 486 12 583 17 583 17 583 10 583 18 583 10 583 42 583 2 583 62																			
G-2		583 21 583 10 583 10 583 10 583 10 583 42 583 10 583 53 583 10 583 18																			
Y-1		612 18 583 8 486 6 486 9 486 9 486 12 583 2 486 32 583 17 583 10																			
Y-2		583 17 486 3 486 9 486 6 486 3 486 21 486 13 583 31 583 17 583 10																			
Chip		583 67 486 27 583 31 486 33 486 36 612 37 486 37 583 61 583 40 583 40																			
PROJ. PR. NO. 18																					
RESPONSES		583 10 583																			

TABLE 23

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4/

[illegible]

TABLE 24

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 26	AMB. ILL. W	583	10	583	10			583	10	583	10	583	10	583	10	583	10	583	10	486	5
	ILL. R-1	587	18	481	12	486	25	486	37	486	25	586	16	486	25	486	22	486	13	585	6
	ILL. R-2	585	27	585	27	585	27	585	27	585	27	585	27	585	27	585	27	585	27	585	32
	G-1	585	40	485	8	486	22	481	24	481	12	587	12	486	13	585	34	486	7	585	12
	G-2	486	6	489	6	582	17	583	21	485	8	586	8	584	8	585	27	584	5	585	40
	Y-1	583	82	583	10	583	62	583	62	583	10	583	42	583	10	587	53	583	10	585	40
	Y-2	612	18	586	17	486	25	486	37	486	25	586	24	486	37	612	37	486	13	585	6
	Chip	612	28	485	8	486	25	486	37	486	13	586	24	486	25	612	46	486	13	612	4
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	
PROJ. PR. NO. 27	AMB. ILL. W	583	21	583	10	583	10	583	10	583	21	583	10	583	10	583	10	583	10	583	4
	ILL. R-1	585	11	485	8	483	17	485	24	481	12	585	11	486	13	486	15	486	6	585	6
	ILL. R-2	585	40	585	27	585	27	585	12	585	27	585	27	585	12	585	68	585	27	586	17
	G-1	486	15	586	8	485	4	485	8	586	4	586	4	584	5	585	40	584	2	486	4
	G-2	586	4	485	4	485	8	485	8	486	11	485	4	581	10	583	42	584	5	581	18
	Y-1	583	21	583	10	583	10	583	10	583	10	583	10	583	10	583	62	583	10	583	42
	Y-2	583	42	586	17	486	13	486	25	486	12	586	24	486	24	586	24	586	24	612	4
	Chip	587	18	583	42	481	12	481	36	583	10	583	42	481	12	587	35	587	18	486	4
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	
PROJ. PR. NO. 28	AMB. ILL. W	583	21	583	10	583	10	583	10	583	21	583	10	583	10	583	10	583	10	583	4
	ILL. R-1	585	11	485	8	483	17	485	24	481	12	585	11	486	13	486	15	486	6	585	6
	ILL. R-2	585	40	585	27	585	27	585	12	585	27	585	27	585	12	585	68	585	27	586	17
	G-1	486	15	586	8	485	4	485	8	586	4	586	4	584	5	585	40	584	2	486	4
	G-2	586	4	485	4	485	8	485	8	486	11	485	4	581	10	583	42	584	5	581	18
	Y-1	583	21	583	10	583	10	583	10	583	10	583	10	583	10	583	62	583	10	583	42
	Y-2	583	42	586	17	486	13	486	25	486	12	586	24	486	24	586	24	586	24	612	4
	Chip	587	18	583	42	481	12	481	36	583	10	583	42	481	12	587	35	587	18	486	4
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	
PROJ. PR. NO. 29	AMB. ILL. W	583	21	583	10	583	10	583	10	583	21	583	10	583	10	583	10	583	10	583	4
	ILL. R-1	585	11	485	8	483	17	485	24	481	12	585	11	486	13	486	15	486	6	585	6
	ILL. R-2	585	40	585	27	585	27	585	12	585	27	585	27	585	12	585	68	585	27	586	17
	G-1	486	15	586	8	485	4	485	8	586	4	586	4	584	5	585	40	584	2	486	4
	G-2	586	4	485	4	485	8	485	8	486	11	485	4	581	10	583	42	584	5	581	18
	Y-1	583	21	583	10	583	10	583	10	583	10	583	10	583	10	583	62	583	10	583	42
	Y-2	583	42	586	17	486	13	486	25	486	12	586	24	486	24	586	24	586	24	612	4
	Chip	587	18	583	42	481	12	481	36	583	10	583	42	481	12	587	35	587	18	486	4
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	
	Chip	587	67	489	27	581	31	485	33	486	36	612	37	486	37	585	61	581	40	WHITE	

TABLE 26

Wavelength (Å) and Excitation Purity (Pe): Narrowband Slide Pair 6

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	W	575	61	575	41	575	30	575	18	575	30	575	30	575	30	572	47	572	30	455	24
	ILL.	575	48	532	16	562	8	562	8	532	24	572	47	562	24	572	47	532	16	478	22
	R-1	575	61	575	62	575	30	575	30	573	62	575	61	573	42	575	48	573	42	478	25
	R-2	572	32	573	21	478	5	478	5	573	42	577	35	575	27	572	47	572	17	478	41
	G-1	572	32	572	17	572	11	551	5	575	18	575	30	455	4	572	32	575	18	455	24
	G-2	575	48	575	30	575	18	575	18	575	30	575	30	575	30	572	32	575	30	455	31
	Y-1	575	61	575	30	532	16	532	16	575	48	575	61	532	24	572	60	575	48	478	22
	Y-2	575	61	575	41	532	24	532	24	575	30	575	61	532	24	572	60	575	61	455	24
Chip		307	07	409	27	5014	31	405	33	402	36	012	37	406	37	575	61	575	61	405	40
PROJ. PR. No. 2	W	575	48	575	48	575	18	575	18	575	30	575	30	575	30	572	47	575	48	455	24
	ILL.	575	30	478	15	532	8	532	8	455	17	572	32	562	17	572	47	532	16	478	22
	R-1	575	61	575	53	575	35	575	35	575	35	575	53	575	53	572	47	575	53	478	37
	R-2	573	42	575	35	455	4	455	8	575	35	573	21	575	12	572	47	575	27	478	32
	G-1	572	32	566	8	478	4	478	6	572	11	572	32	478	11	572	47	575	18	478	32
	G-2	575	48	572	32	572	17	572	17	572	32	572	32	572	32	572	32	572	32	575	48
	Y-1	575	48	562	24	562	17	562	17	575	48	575	61	562	24	572	47	575	48	478	22
	Y-2	575	48	532	32	532	16	532	16	532	24	575	61	532	24	572	60	575	61	455	24
Chip		307	07	409	27	5014	31	405	33	402	36	012	37	406	37	575	61	575	61	405	40
PROJ. PR. No. 3	W	575	30	575	18	575	18	575	18	575	18	575	30	575	18	572	32	575	18	562	24
	ILL.	575	48	575	42	455	8	455	17	575	48	572	47	562	17	572	60	575	48	562	24
	R-1	575	53	575	53	575	35	575	35	575	35	575	53	575	53	572	47	575	53	478	24
	R-2	573	42	573	21	575	35	575	18	575	12	575	30	455	24	572	60	575	6	532	24
	G-1	566	35	551	10	572	11	574	2	551	10	572	17	574	5	572	47	562	35	532	24
	G-2	575	30	575	18	575	18	575	18	575	18	575	30	575	18	575	48	575	18	532	24
	Y-1	575	61	575	48	562	17	562	24	575	48	575	61	562	24	575	61	575	30	562	24
	Y-2	575	61	575	48	575	30	562	24	575	61	575	61	575	30	572	60	575	30	562	24
Chip		307	07	409	27	5014	31	405	33	402	36	012	37	406	37	575	61	575	61	405	40
PROJ. PR. No. 4	W	572	32	572	17	572	17	572	11	572	17	572	17	572	17	575	30	572	17	562	24
	ILL.	575	54	532	16	562	4	562	8	455	8	572	47	575	27	575	34	532	16	562	31
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	478	30
	R-2	575	34	672	28	478	5	478	5	672	18	575	18	577	18	575	27	575	30	532	24
	G-1	566	17	574	5	551	10	574	5	574	5	575	18	574	5	575	48	551	20	478	19
	G-2	575	30	575	18	575	18	575	18	575	18	575	30	575	18	575	48	575	18	532	22
	Y-1	575	61	575	48	532	16	532	24	575	48	575	61	575	48	575	61	575	61	562	31
	Y-2	575	61	575	48	575	30	562	17	575	48	575	61	575	30	575	61	575	61	562	31
Chip		307	07	409	27	5014	31	405	33	402	36	012	37	406	37	575	61	575	61	405	40
PROJ. PR. No. 5	W	572	47	572	32	572	17	572	32	572	32	572	32	572	32	572	47	572	32	562	24
	ILL.	575	48	575	30	562	8	562	4	572	47	575	61	575	12	575	61	572	47	562	31
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	532	32
	R-2	573	62	573	42	573	10	573	10	575	30	575	48	455	17	575	27	575	35	532	32
	G-1	572	32	566	17	566	8	551	5	566	17	572	17	574	5	575	30	566	17	532	16
	G-2	575	30	575	18	575	18	575	18	575	30	575	48	532	24	575	30	575	18	575	18
	Y-1	575	61	575	48	575	30	575	30	575	61	575	61	575	48	575	61	575	61	562	31
	Y-2	575	61	575	48	575	30	575	48	575	61	575	48	575	30	575	61	575	61	562	31

TABLE 26

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
		587.67	499.27	561.6	31	495.33	492.36	612.37	486.37	575.61	551.40	WHITE									
PROJ. PR. No. 6	AMB. ILL. W	572.47	572.32	572.17	572.11	572.17	572.32	572.17	572.47	572.17	453.24										
	R-1	575.48	575.30	572.32	566.8	572.47	572.60	572.16	572.60	572.48	566.24										
	R-2	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	481.36										
	G-1	575.48	573.42	575.12	575.12	573.21	573.42	573.21	575.30	575.18	572.16										
	G-2	566.17	571.10	572.11	572.11	566.17	572.17	574.2	572.47	566.17	566.24										
	Y-1	575.30	575.30	575.18	575.18	575.30	575.30	575.18	575.48	575.18	566.31										
PROJ. PR. No. 7	AMB. ILL. W	572.32	572.32	572.32	572.32	572.32	572.32	572.32	572.32	572.32	572.32										
	R-1	573.62	573.53	577.35	577.35	575.27	575.40	573.42	573.42	573.53	442.18										
	R-2	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53										
	G-1	575.27	612.18	571.10	571.20	573.21	573.10	575.27	577.35	577.18	574.9										
	G-2	575.27	575.12	472.3	572.11	575.6	575.12	575.6	612.9	612.18	574.15										
	Y-1	573.62	573.62	573.21	573.21	573.42	573.42	573.42	573.42	573.42	573.42										
PROJ. PR. No. 8	AMB. ILL. W	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53										
	R-1	575.27	575.35	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42										
	R-2	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53										
	G-1	575.27	575.12	472.3	572.11	575.6	575.12	575.6	612.9	612.18	574.15										
	G-2	575.27	575.12	472.3	572.11	575.6	575.12	575.6	612.9	612.18	574.15										
	Y-1	573.62	573.62	573.21	573.21	573.42	573.42	573.42	573.42	573.42	573.42										
PROJ. PR. No. 9	AMB. ILL. W	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53										
	R-1	575.27	575.35	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42										
	R-2	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53										
	G-1	575.27	575.12	472.3	572.11	575.6	575.12	575.6	612.9	612.18	574.15										
	G-2	575.27	575.12	472.3	572.11	575.6	575.12	575.6	612.9	612.18	574.15										
	Y-1	573.62	573.62	573.21	573.21	573.42	573.42	573.42	573.42	573.42	573.42										
PROJ. PR. No. 10	AMB. ILL. W	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53										
	R-1	575.27	575.35	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42										
	R-2	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53	577.53										
	G-1	575.27	575.12	472.3	572.11	575.6	575.12	575.6	612.9	612.18	574.15										
	G-2	575.27	575.12	472.3	572.11	575.6	575.12	575.6	612.9	612.18	574.15										
	Y-1	573.62	573.62	573.21	573.21	573.42	573.42	573.42	573.42	573.42	573.42										

TABLE 27

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 5

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 11	AMB. ILL. W	583	42	583	21	583	21	583	10	583	42	583	42	583	21	583	42	583	42	583	10
	R-1	585	54	612	37	458	17	455	8	585	54	612	37	612	18	585	54	612	37	488	23
	R-2	585	40	585	40	585	40	585	40	585	40	585	40	585	40	585	40	585	40	585	20
	G-1	612	28	612	18	585	27	585	12	585	27	612	18	585	16	585	27	585	15	492	18
	G-2	587	8	587	5	585	41	499	3	587	18	587	18	587	5	587	62	587	21	587	9
	Y-1	583	42	583	42	583	21	583	21	583	42	583	42	583	10	585	48	583	42	499	13
	Y-2	587	53	587	35	583	21	488	7	583	42	587	35	585	27	583	62	587	25	492	9
Chip		587	67	499	27	581	31	495	33	492	36	612	37	486	37	583	61	581	40	585	23
PROJ. PR. NO. 12	AMB. ILL. W	587	35	587	35	587	18	587	8	587	35	587	35	587	18	583	62	587	35	586	35
	R-1	585	27	587	35	581	10	581	10	585	27	612	18	586	16	585	54	612	28	584	9
	R-2	585	40	585	40	583	42	583	42	585	40	585	40	583	42	583	42	585	40	581	43
	G-1	585	57	612	37	581	31	581	31	612	28	585	40	586	17	586	35	585	54	584	15
	G-2	585	12	587	5	585	6	499	6	584	5	585	12	614	5	587	53	583	10	582	47
	Y-1	583	18	583	62	583	42	583	21	583	42	583	62	583	21	583	42	583	62	587	43
	Y-2	585	27	587	35	586	8	586	17	585	27	587	35	583	42	585	27	612	28	584	9
Chip		587	67	499	27	581	31	495	33	492	36	612	37	486	37	583	61	581	40	585	15
PROJ. PR. NO. 13	AMB. ILL. W	587	35	587	18	587	8	587	8	587	18	587	18	587	8	587	53	587	35	586	35
	R-1	585	54	486	22	586	8	586	8	486	15	612	28	586	17	585	54	612	28	584	5
	R-2	585	31	585	40	585	27	585	27	585	27	585	40	585	27	585	40	585	21	581	43
	G-1	585	40	612	28	586	35	586	54	587	35	612	28	581	20	612	28	612	18	581	31
	G-2	585	12	584	5	583	10	584	2	581	20	585	12	584	9	585	40	585	12	582	47
	Y-1	583	62	583	21	583	10	583	10	583	21	583	42	583	10	585	40	586	42	586	54
	Y-2	585	27	587	35	586	8	586	17	585	27	612	28	586	17	585	40	612	28	581	10
Chip		587	67	499	27	581	31	495	33	492	36	612	37	486	37	583	61	581	40	585	15
PROJ. PR. NO. 14	AMB. ILL. W	583	42	583	40	583	21	583	10	583	42	583	42	583	21	583	42	583	42	581	20
	R-1	612	37	587	35	586	8	586	8	585	27	585	40	586	17	612	28	612	18	581	10
	R-2	585	54	585	40	585	27	585	27	585	40	585	40	585	27	585	40	585	40	581	43
	G-1	585	27	585	40	586	35	586	35	583	42	585	27	586	17	585	40	612	18	584	9
	G-2	612	9	612	4	583	10	585	11	583	10	585	12	584	5	585	27	587	18	586	54
	Y-1	583	62	583	42	583	21	583	21	583	42	583	62	583	10	585	27	583	62	586	54
	Y-2	585	40	587	35	583	42	583	21	587	35	585	27	587	35	585	40	612	28	584	9
Chip		587	67	499	27	581	31	495	33	492	36	612	37	486	37	583	61	581	40	585	15
PROJ. PR. NO. 15	AMB. ILL. W	583	62	583	62	583	42	583	21	583	42	583	42	583	21	583	42	583	42	581	31
	R-1	612	28	585	27	488	8	488	8	486	22	585	54	586	16	585	40	612	28	584	9
	R-2	585	40	585	40	583	42	583	42	585	40	585	40	583	42	583	42	585	54	584	20
	G-1	612	37	612	28	586	35	586	35	587	35	585	40	585	27	612	28	585	54	584	9
	G-2	583	21	583	10	585	11	585	11	587	8	583	21	586	17	585	27	583	21	582	52
	Y-1	583	62	583	42	583	21	583	21	583	42	583	42	583	21	583	42	583	62	581	31
	Y-2	612	28	585	27	586	8	586	17	585	40	587	35	585	27	586	15	585	27	584	9

TABLE 28

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 5

	1	2	3	4	5	6	7	8	9	back
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16										
AMB. ILL. W	575	11	575	11	575	11	575	11	575	11
R-1	575	8	435	8	435	17	435	17	435	17
R-2	575	54	575	40	575	27	575	27	575	40
G-1	612	18	478	11	478	22	478	22	478	32
G-2	575	10	551	5	575	12	575	10	575	10
Y-1	575	11	575	11	575	11	575	11	575	11
Y-2	575	10	575	10	575	10	575	10	575	10
Chip	575	67	499	27	561	31	435	33	492	36
PROJ. PR. No. 17										
AMB. ILL. W	575	12	575	21	575	11	575	11	575	11
R-1	575	12	575	21	575	11	575	11	575	11
R-2	575	12	575	21	575	11	575	11	575	11
G-1	612	18	478	11	478	22	478	22	478	32
G-2	575	10	551	5	575	12	575	10	575	10
Y-1	575	11	575	11	575	11	575	11	575	11
Y-2	575	10	575	10	575	10	575	10	575	10
Chip	575	67	499	27	561	31	435	33	492	36
PROJ. PR. No. 18										
AMB. ILL. W	575	10	575	10	575	10	575	10	575	10
R-1	575	10	575	10	575	10	575	10	575	10
R-2	575	10	575	10	575	10	575	10	575	10
G-1	612	18	478	11	478	22	478	22	478	32
G-2	575	10	551	5	575	12	575	10	575	10
Y-1	575	11	575	11	575	11	575	11	575	11
Y-2	575	10	575	10	575	10	575	10	575	10
Chip	575	67	499	27	561	31	435	33	492	36
PROJ. PR. No. 19										
AMB. ILL. W	575	6	575	6	575	6	575	6	575	6
R-1	575	6	575	6	575	6	575	6	575	6
R-2	575	6	575	6	575	6	575	6	575	6
G-1	612	18	478	11	478	22	478	22	478	32
G-2	575	10	551	5	575	12	575	10	575	10
Y-1	575	11	575	11	575	11	575	11	575	11
Y-2	575	10	575	10	575	10	575	10	575	10
Chip	575	67	499	27	561	31	435	33	492	36
PROJ. PR. No. 20										
AMB. ILL. W	575	6	575	6	575	6	575	6	575	6
R-1	575	6	575	6	575	6	575	6	575	6
R-2	575	6	575	6	575	6	575	6	575	6
G-1	612	18	478	11	478	22	478	22	478	32
G-2	575	10	551	5	575	12	575	10	575	10
Y-1	575	11	575	11	575	11	575	11	575	11
Y-2	575	10	575	10	575	10	575	10	575	10
Chip	575	67	499	27	561	31	435	33	492	36

TABLE 29

Wavelength (λ) and Excitation Purity (Pe): Narrowband slide Pair 5

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	AMB. ILL. W	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6
	AMB. ILL. R-1	478	11	478	8	478	22	478	32	478	8	478	22	478	17	478	37	478	17	478	4
	AMB. ILL. R-2	478	53	478	53	478	53	478	53	478	53	478	53	478	53	478	53	478	53	478	53
	AMB. ILL. Q-1	478	12	478	6	478	25	478	13	478	11	478	20	478	12	478	23	478	8	478	5
	AMB. ILL. Q-2	478	3	478	3	478	3	478	3	478	3	478	3	478	3	478	3	478	3	478	3
	Y-1	478	12	478	4	478	17	478	17	478	8	478	22	478	21	478	36	478	17	478	6
	Y-2	478	12	478	17	478	17	478	17	478	17	478	17	478	17	478	17	478	17	478	17
Chip		575	67	478	27	575	31	478	35	478	35	575	37	478	37	575	37	478	37	575	37
PROJ. PR. No. 22	AMB. ILL. W	575	17	575	17	575	11	575	11	575	17	575	17	575	17	575	11	575	12	575	12
	AMB. ILL. R-1	478	42	478	35	478	8	478	17	478	53	478	22	478	22	478	31	478	18	478	8
	AMB. ILL. R-2	478	47	478	53	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35
	AMB. ILL. Q-1	478	8	478	17	478	24	478	17	478	35	478	8	478	35	478	24	478	8	478	24
	AMB. ILL. Q-2	478	17	478	17	478	17	478	17	478	17	478	17	478	17	478	17	478	17	478	17
	Y-1	478	47	478	35	478	17	478	35	478	35	478	35	478	35	478	35	478	35	478	35
	Y-2	478	47	478	35	478	17	478	35	478	35	478	35	478	35	478	35	478	35	478	35
Chip		575	67	478	27	575	31	478	35	478	35	575	37	478	37	575	37	478	37	575	37
PROJ. PR. No. 23	AMB. ILL. W	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10
	AMB. ILL. R-1	478	35	478	62	478	11	478	11	478	62	478	11	478	62	478	11	478	62	478	11
	AMB. ILL. R-2	478	35	478	40	478	35	478	35	478	40	478	35	478	40	478	35	478	40	478	35
	AMB. ILL. Q-1	478	5	478	11	478	22	478	22	478	27	478	12	478	27	478	12	478	27	478	12
	AMB. ILL. Q-2	478	5	478	5	478	11	478	11	478	11	478	5	478	11	478	11	478	11	478	11
	Y-1	478	10	478	42	478	21	478	21	478	42	478	21	478	42	478	21	478	42	478	21
	Y-2	478	10	478	42	478	21	478	21	478	42	478	21	478	42	478	21	478	42	478	21
Chip		575	67	478	27	575	31	478	35	478	35	575	37	478	37	575	37	478	37	575	37
PROJ. PR. No. 24	AMB. ILL. W	575	21	575	21	575	10	575	10	575	21	575	21	575	42	575	10	575	42	575	35
	AMB. ILL. R-1	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35
	AMB. ILL. R-2	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35
	AMB. ILL. Q-1	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35
	AMB. ILL. Q-2	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35
	Y-1	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35
	Y-2	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35	478	35
Chip		575	67	478	27	575	31	478	35	478	35	575	37	478	37	575	37	478	37	575	37
PROJ. PR. No. 25	AMB. ILL. W	575	21	575	21	575	10	575	10	575	11	575	11	575	11	575	17	575	21	575	17
	AMB. ILL. R-1	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10
	AMB. ILL. R-2	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10
	AMB. ILL. Q-1	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10
	AMB. ILL. Q-2	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10
	Y-1	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10
	Y-2	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10	478	10
Chip		575	67	478	27	575	31	478	35	478	35	575	37	478	37	575	37	478	37	575	37

TABLE 30

Wavelength (λ) and Excitation Purity (Pe); Narrowband Slide Pair 5

	1		2		3		4		5		6		7		8		9		back	
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 26																				
ANS. ILL. RESPONSES																				
R-1	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10
R-2	583	9	455	17	478	11	478	11	481	12	566	17	481	24	612	28	455	8	612	9
G-1	478	19	478	6	478	11	478	11	478	4	478	6	583	10	583	27	583	12	583	2
G-2	478	3	478	9	583	10	583	10	478	11	583	10	583	5	583	35	583	10	583	48
Y-1	583	6	583	6	583	6	583	6	583	6	583	6	583	6	583	35	583	6	583	27
Y-2	583	21	583	16	478	11	481	24	583	42	583	62	478	11	583	53	455	17	583	6
Chip	583	21	455	8	583	16	478	25	478	13	583	16	478	25	583	31	478	7	583	6
	583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. NO. 27																				
ANS. ILL. RESPONSES																				
R-1	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	42	583	10	583	4
R-2	583	18	455	8	455	17	455	17	566	17	566	8	478	5	612	18	566	8	583	6
G-1	583	10	583	40	583	27	583	27	583	27	583	40	583	27	583	40	583	40	583	35
G-2	583	27	612	9	478	22	478	22	455	17	478	8	478	5	583	12	583	6	478	6
Y-1	478	4	478	6	583	8	583	11	583	6	583	10	583	10	583	21	583	5	583	35
Y-2	478	4	478	4	478	4	478	4	478	4	478	4	478	4	583	42	478	4	478	5
Chip	583	42	583	8	478	12	478	24	583	42	478	25	583	24	583	24	583	24	583	8
	583	31	478	5	583	8	478	24	583	8	583	16	478	6	583	31	455	24	583	6
	583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. NO.																				
ANS. ILL. RESPONSES																				
R-1	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10
R-2	583	18	455	8	455	17	455	17	566	17	566	8	478	5	612	18	566	8	583	6
G-1	583	10	583	40	583	27	583	27	583	27	583	40	583	27	583	40	583	40	583	35
G-2	583	27	612	9	478	22	478	22	455	17	478	8	478	5	583	12	583	6	478	6
Y-1	478	4	478	6	583	8	583	11	583	6	583	10	583	10	583	21	583	5	583	35
Y-2	478	4	478	4	478	4	478	4	478	4	478	4	478	4	583	42	478	4	478	5
Chip	583	42	583	8	478	12	478	24	583	42	478	25	583	24	583	24	583	24	583	8
	583	31	478	5	583	8	478	24	583	8	583	16	478	6	583	31	455	24	583	6
	583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. NO.																				
ANS. ILL. RESPONSES																				
R-1	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10
R-2	583	18	455	8	455	17	455	17	566	17	566	8	478	5	612	18	566	8	583	6
G-1	583	10	583	40	583	27	583	27	583	27	583	40	583	27	583	40	583	40	583	35
G-2	583	27	612	9	478	22	478	22	455	17	478	8	478	5	583	12	583	6	478	6
Y-1	478	4	478	6	583	8	583	11	583	6	583	10	583	10	583	21	583	5	583	35
Y-2	478	4	478	4	478	4	478	4	478	4	478	4	478	4	583	42	478	4	478	5
Chip	583	42	583	8	478	12	478	24	583	42	478	25	583	24	583	24	583	24	583	8
	583	31	478	5	583	8	478	24	583	8	583	16	478	6	583	31	455	24	583	6
	583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. NO.																				
ANS. ILL. RESPONSES																				
R-1	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10
R-2	583	18	455	8	455	17	455	17	566	17	566	8	478	5	612	18	566	8	583	6
G-1	583	10	583	40	583	27	583	27	583	27	583	40	583	27	583	40	583	40	583	35
G-2	583	27	612	9	478	22	478	22	455	17	478	8	478	5	583	12	583	6	478	6
Y-1	478	4	478	6	583	8	583	11	583	6	583	10	583	10	583	21	583	5	583	35
Y-2	478	4	478	4	478	4	478	4	478	4	478	4	478	4	583	42	478	4	478	5
Chip	583	42	583	8	478	12	478	24	583	42	478	25	583	24	583	24	583	24	583	8
	583	31	478	5	583	8	478	24	583	8	583	16	478	6	583	31	455	24	583	6
	583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

TABLE 2/

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	ILL. W	575	46	575	30	575	30	575	30	575	30	575	42	575	18	575	18	575	30	455	24
	R-1	577	68	538	16	572	21	572	28	472	19	575	61	472	22	575	30	575	48	455	24
	R-2	575	61	575	30	575	61	575	61	575	18	575	30	575	18	575	30	575	48	471	36
	G-1	577	35	575	12	577	18	577	18	455	17	577	35	575	12	575	30	575	32	478	32
	G-2	572	32	575	11	572	17	572	11	572	11	572	32	575	11	575	11	572	32	471	22
	Y-1	575	48	575	30	575	48	575	30	575	18	575	48	575	30	575	30	575	48	455	31
	Y-2	575	61	575	42	566	24	575	61	566	24	575	61	566	24	572	47	575	61	566	17
Chip		575	61	575	30	575	48	575	48	575	30	575	61	575	48	575	30	575	61	455	24
		507	67	499	27	561	31	495	33	492	36	612	37	406	37	575	61	571	40	WHITE	
PROJ. PR. No. 2	ILL. W	575	30	575	18	575	18	575	18	575	18	575	30	575	18	575	18	575	18	455	17
	R-1	577	53	472	12	575	27	472	22	472	22	575	40	572	16	572	47	572	16	472	25
	R-2	577	53	577	53	577	53	577	53	577	53	577	53	577	53	572	32	577	53	472	25
	G-1	573	42	575	12	577	35	577	18	455	17	573	42	472	22	575	30	575	18	478	32
	G-2	572	32	572	11	572	17	572	11	572	11	572	32	566	4	575	11	572	32	471	22
	Y-1	575	48	575	30	575	48	575	30	575	30	575	48	575	18	575	18	575	48	455	31
	Y-2	575	61	566	24	575	48	566	24	575	61	566	24	575	61	566	31	572	47	455	17
Chip		575	61	575	30	575	48	575	30	566	24	575	61	566	24	575	30	575	61	455	24
		507	67	499	27	561	31	495	33	492	36	612	37	406	37	572	61	571	40	WHITE	
PROJ. PR. No. 3	ILL. W	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	455	24
	R-1	577	35	573	21	577	12	577	18	566	16	575	30	472	12	575	48	575	61	532	24
	R-2	577	53	612	18	577	53	612	18	612	18	577	53	612	18	575	48	612	28	455	31
	G-1	573	21	575	30	573	10	573	10	455	17	575	30	455	17	575	30	572	47	566	24
	G-2	566	17	575	11	566	8	571	5	574	5	566	35	571	5	572	17	566	17	532	24
	Y-1	572	17	572	17	572	32	572	32	572	17	572	32	572	17	572	17	572	32	566	31
	Y-2	575	61	566	24	575	48	566	24	566	24	575	61	566	24	572	32	575	48	566	17
Chip		575	61	575	30	575	48	575	30	575	30	575	61	575	30	575	30	575	48	566	24
		507	67	499	27	561	31	495	33	492	36	612	37	406	37	575	61	571	40	WHITE	
PROJ. PR. No. 4	ILL. W	572	32	572	17	572	17	572	17	572	32	572	17	572	17	572	17	572	17	566	24
	R-1	575	40	566	8	455	8	455	17	455	8	575	48	455	8	575	37	566	25	532	24
	R-2	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	532	32
	G-1	575	34	577	35	573	42	472	12	455	4	575	12	532	8	566	16	532	16	532	24
	G-2	566	35	574	2	571	20	574	5	499	6	531	20	472	6	572	17	566	17	472	22
	Y-1	572	47	572	32	572	32	572	32	572	17	572	32	572	32	572	32	572	32	566	31
	Y-2	575	61	575	30	575	48	575	30	575	30	575	61	575	48	575	30	575	48	566	31
Chip		575	61	575	30	575	48	575	30	575	30	575	61	575	48	575	30	575	48	566	31
		507	67	499	27	561	31	495	33	492	36	612	37	406	37	575	61	571	40	WHITE	
PROJ. PR. No. 5	ILL. W	572	47	572	17	572	32	572	32	572	17	572	32	572	17	572	17	572	17	566	24
	R-1	575	61	572	60	572	47	572	47	572	32	575	30	575	37	612	18	575	37	532	32
	R-2	575	61	575	48	575	48	575	48	575	30	575	48	575	30	575	30	575	30	532	32
	G-1	577	68	575	12	573	42	577	21	575	18	577	47	575	12	577	18	577	42	532	32
	G-2	566	35	572	11	572	17	572	17	572	11	572	17	566	17	572	17	572	17	566	24
	Y-1	572	47	572	17	572	32	572	32	572	17	572	47	572	17	572	17	572	17	566	31
	Y-2	575	61	575	30	575	48	575	48	575	30	575	61	575	30	575	48	575	48	566	31
		575	61	575	48	575	61	575	48	575	30	575	61	575	48	575	48	575	48	566	31

TABLE 32

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 6	ILL. E W	511	47	512	37	512	17	512	17	512	17	512	47	512	17	512	17	512	32	512	24
	ILL. R-1	515	48	516	17	515	30	515	30	516	8	515	48	516	17	612	28	515	30	516	24
	ILL. R-2	515	61	514	53	515	61	515	61	517	53	515	61	517	53	515	30	515	61	453	31
	AMB. G-1	513	62	455	17	455	8	455	8	455	17	513	21	516	8	515	30	513	42	516	17
	AMB. G-2	516	17	512	17	516	8	511	10	514	2	516	35	514	8	512	17	516	17	516	24
	Y-1	512	47	512	17	512	32	512	32	512	17	512	47	512	17	512	17	512	47	455	31
PROJ. PR. No. 7	ILL. E W	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	ILL. R-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	ILL. R-2	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	AMB. G-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	AMB. G-2	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	Y-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
PROJ. PR. No. 8	ILL. E W	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	ILL. R-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	ILL. R-2	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	AMB. G-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	AMB. G-2	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	Y-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
PROJ. PR. No. 9	ILL. E W	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	ILL. R-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	ILL. R-2	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	AMB. G-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	AMB. G-2	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	Y-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
PROJ. PR. No. 10	ILL. E W	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	ILL. R-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	ILL. R-2	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	AMB. G-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	AMB. G-2	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31
	Y-1	515	61	515	30	515	48	515	48	515	30	515	61	515	30	515	48	515	61	516	31

TABLE 33

[illegible]

TABLE 34

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16	AMB. ILL. W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	30
	AMB. ILL. R-1	573	21	455	8	573	21	455	8	455	8	573	10	455	8	566	17	455	8	573	10
	AMB. ILL. R-2	577	68	577	53	577	68	577	53	577	68	577	68	577	53	577	53	577	53	577	32
	AMB. ILL. G-1	575	12	478	32	478	11	478	22	478	22	577	18	566	8	577	5	575	12	577	32
	AMB. ILL. G-2	575	6	575	12	575	6	612	4	575	12	481	6	577	18	573	42	577	5	573	78
	AMB. ILL. Y-1	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	48
	AMB. ILL. Y-2	575	27	455	8	566	17	566	24	478	11	566	24	455	24	566	24	566	24	566	10
Chip		587	67	499	27	561	31	499	33	492	36	612	37	486	37	573	61	571	40	573	10
PROJ. PR. No. 17	AMB. ILL. W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	AMB. ILL. R-1	566	8	566	17	455	8	455	17	481	12	566	8	566	17	582	16	582	16	573	10
	AMB. ILL. R-2	575	40	575	27	575	27	575	27	575	27	575	40	575	27	575	27	575	27	575	32
	AMB. ILL. G-1	572	12	478	22	478	6	478	22	478	22	575	6	575	6	575	17	575	12	575	35
	AMB. ILL. G-2	572	4	573	21	481	6	478	3	573	21	481	7	573	10	577	18	577	5	573	62
	AMB. ILL. Y-1	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	30
	AMB. ILL. Y-2	575	27	566	16	566	17	566	17	566	17	566	24	566	24	566	24	566	24	566	8
Chip		587	67	499	27	561	31	499	33	492	36	612	37	486	37	573	61	571	40	573	10
PROJ. PR. No. 18	AMB. ILL. W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	AMB. ILL. R-1	566	17	455	8	566	24	566	24	455	17	566	24	566	24	455	17	566	24	566	8
	AMB. ILL. R-2	577	68	577	53	577	68	577	53	577	53	577	68	577	53	577	53	577	53	577	43
	AMB. ILL. G-1	575	27	566	17	577	5	566	8	566	35	612	9	566	8	577	5	577	12	577	20
	AMB. ILL. G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	62
	AMB. ILL. Y-1	572	18	566	24	478	27	566	17	566	16	566	17	566	24	566	24	566	24	566	47
	AMB. ILL. Y-2	573	24	455	17	566	17	455	17	566	17	566	24	566	17	455	17	566	24	566	8
Chip		587	67	499	27	561	31	499	33	492	36	612	37	486	37	573	61	571	40	573	10
PROJ. PR. No. 19	AMB. ILL. W	575	6	575	12	575	12	575	12	575	12	575	12	575	12	575	12	575	12	575	40
	AMB. ILL. R-1	575	8	566	17	455	4	455	17	478	5	455	4	455	17	455	17	455	4	455	28
	AMB. ILL. R-2	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	54
	AMB. ILL. G-1	577	18	478	11	478	5	478	11	478	11	478	5	478	5	566	8	577	5	577	13
	AMB. ILL. G-2	486	7	575	11	486	3	577	8	575	12	481	6	572	11	572	17	577	5	577	57
	AMB. ILL. Y-1	572	3	572	6	572	3	572	6	572	6	572	3	572	6	572	6	572	3	572	26
	AMB. ILL. Y-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chip		587	67	499	27	561	31	499	33	492	36	612	37	486	37	573	61	571	40	573	10
PROJ. PR. No. 20	AMB. ILL. W	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	27
	AMB. ILL. R-1	478	11	478	5	478	5	478	5	478	5	478	5	478	5	478	5	478	5	478	27
	AMB. ILL. R-2	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	52
	AMB. ILL. G-1	575	4	575	4	575	4	575	4	575	4	575	4	575	4	575	4	575	4	575	5
	AMB. ILL. G-2	575	6	575	12	478	2	566	17	575	12	478	2	575	10	575	11	575	5	575	40
	AMB. ILL. Y-1	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	54
	AMB. ILL. Y-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chip		587	67	499	27	561	31	499	33	492	36	612	37	486	37	573	61	571	40	573	10

TABLE 35

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	ILL. W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	R-1	435	4	435	17	435	24	435	24	435	11	435	4	435	12	435	5	435	4	435	6
	R-2	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	17
	G-1	575	6	435	4	612	4	612	4	566	4	612	4	577	18	577	8	577	8	577	4
	G-2	574	2	575	10	575	10	575	5	575	11	575	5	575	6	575	11	575	10	577	35
	Y-1	566	4	575	10	575	10	575	5	575	11	575	5	575	6	575	11	575	10	577	35
	Y-2	566	4	575	10	575	10	575	5	575	11	575	5	575	6	575	11	575	10	577	35
Chip		577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
PROJ. PR. No. 22	ILL. W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11
	R-1	573	42	575	11	575	42	575	62	575	30	575	42	575	11	575	11	575	11	575	11
	R-2	577	53	577	35	577	53	577	35	577	35	577	53	577	35	577	35	577	35	577	35
	G-1	566	4	478	11	435	4	435	4	478	12	478	12	478	12	478	12	478	12	478	12
	G-2	574	2	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11
	Y-1	575	17	575	11	575	32	575	17	575	11	575	32	575	17	575	17	575	17	575	17
	Y-2	575	61	575	30	575	42	575	30	575	30	575	12	575	12	575	12	575	12	575	12
Chip		577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
PROJ. PR. No. 23	ILL. W	571	5	571	5	571	5	571	5	571	5	571	5	571	5	571	5	571	5	571	5
	R-1	573	42	573	21	573	35	573	35	573	21	573	42	573	35	573	17	573	35	573	17
	R-2	575	54	575	40	575	54	575	40	575	40	575	54	575	40	575	40	575	40	575	40
	G-1	478	11	478	11	478	11	478	11	478	11	478	11	478	11	478	11	478	11	478	11
	G-2	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
	Y-1	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
	Y-2	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
Chip		577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
PROJ. PR. No. 24	ILL. W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10
	R-1	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
	R-2	575	54	575	40	575	54	575	40	575	40	575	54	575	40	575	40	575	40	575	40
	G-1	575	27	575	42	575	27	575	35	575	17	575	12	575	17	575	17	575	17	575	17
	G-2	575	8	575	10	575	8	575	10	575	11	575	8	575	10	575	10	575	10	575	10
	Y-1	575	42	575	21	575	42	575	21	575	21	575	42	575	21	575	21	575	21	575	21
	Y-2	575	27	575	42	575	27	575	42	575	27	575	42	575	27	575	42	575	27	575	27
Chip		577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
PROJ. PR. No. 25	ILL. W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10
	R-1	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35
	R-2	575	54	575	40	575	54	575	40	575	40	575	54	575	40	575	40	575	40	575	40
	G-1	575	12	575	17	575	12	575	17	575	17	575	12	575	17	575	17	575	17	575	17
	G-2	574	2	575	11	575	2	575	11	575	11	575	2	575	11	575	11	575	11	575	11
	Y-1	575	42	575	21	575	42	575	21	575	21	575	42	575	21	575	21	575	21	575	21
	Y-2	575	27	575	42	575	27	575	42	575	27	575	42	575	27	575	42	575	27	575	27
Chip		577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35	577	35

TABLE 36

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 26	AMB. ILL. W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	21
	R-1	583	10	455	17	455	8	455	17	455	24	583	10	455	8	583	16	455	8	583	6
	R-2	583	53	583	42	583	35	583	42	583	42	583	53	583	42	583	42	583	42	583	35
	G-1	583	40	551	10	551	5	566	8	551	10	583	12	566	8	583	27	612	18	566	8
	G-2	492	4	572	17	551	10	583	3	612	9	492	3	583	12	583	18	492	6	583	35
	Y-1	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	6
	Y-2	583	35	478	11	583	42	583	42	478	24	583	35	478	24	583	21	583	42	583	8
Chip		583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 27	AMB. ILL. W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11
	R-1	566	8	572	2	566	8	455	4	455	17	572	21	566	8	566	17	492	8	612	4
	R-2	583	53	583	35	583	35	583	35	583	35	583	53	583	35	583	35	583	35	583	35
	G-1	583	12	478	11	478	5	478	11	478	11	612	4	583	5	566	8	612	9	583	5
	G-2	492	3	572	10	583	10	583	10	572	18	583	5	583	10	612	9	566	8	583	42
	Y-1	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	Y-2	583	42	566	17	566	24	566	24	583	21	583	42	566	24	566	21	583	42	583	6
Chip		583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No.	AMB. ILL. W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	21
	R-1	583	10	455	17	455	8	455	17	455	24	583	10	455	8	583	16	455	8	583	6
	R-2	583	53	583	42	583	35	583	42	583	42	583	53	583	42	583	42	583	42	583	35
	G-1	583	40	551	10	551	5	566	8	551	10	583	12	566	8	583	27	612	18	566	8
	G-2	492	4	572	17	551	10	583	3	612	9	492	3	583	12	583	18	492	6	583	35
	Y-1	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	6
	Y-2	583	35	478	11	583	42	583	42	478	24	583	35	478	24	583	21	583	42	583	8
Chip		583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No.	AMB. ILL. W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11
	R-1	566	8	572	2	566	8	455	4	455	17	572	21	566	8	566	17	492	8	612	4
	R-2	583	53	583	35	583	35	583	35	583	35	583	53	583	35	583	35	583	35	583	35
	G-1	583	12	478	11	478	5	478	11	478	11	612	4	583	5	566	8	612	9	583	5
	G-2	492	3	572	10	583	10	583	10	572	18	583	5	583	10	612	9	566	8	583	42
	Y-1	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	Y-2	583	42	566	17	566	24	566	24	583	21	583	42	566	24	566	21	583	42	583	6
Chip		583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No.	AMB. ILL. W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	21
	R-1	583	10	455	17	455	8	455	17	455	24	583	10	455	8	583	16	455	8	583	6
	R-2	583	53	583	42	583	35	583	42	583	42	583	53	583	42	583	42	583	42	583	35
	G-1	583	40	551	10	551	5	566	8	551	10	583	12	566	8	583	27	612	18	566	8
	G-2	492	4	572	17	551	10	583	3	612	9	492	3	583	12	583	18	492	6	583	35
	Y-1	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	6
	Y-2	583	35	478	11	583	42	583	42	478	24	583	35	478	24	583	21	583	42	583	8
Chip		583	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

TABLE 37

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

Wavelength (Å) and Excitation Filter (nm)													Back												
		1		2		3		4		5		6		7		8		9		back					
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe				
PROJ. PR. NO. 1	ILL. W	512	47	512	32	512	47	512	32	512	30	512	47	512	30	512	32	512	47	478	36				
	ILL. R-1	515	61	532	24	512	47	515	40	532	24	512	60	532	24	512	32	532	16	455	24				
	ILL. R-2	515	61	532	24	515	61	532	24	515	61	532	24	515	61	532	24	515	61	532	24				
	G-1	512	42	515	27	512	21	512	21	532	8	512	42	455	17	512	30	515	27	478	22				
	G-2	512	32	478	3	512	17	512	11	455	8	512	32	478	12	512	11	512	17	478	22				
	Y-1	515	30	512	42	515	30	515	30	512	42	515	30	512	42	515	18	515	30	455	24				
Y-2	515	61	532	24	515	30	532	24	532	24	515	48	532	24	515	30	515	48	455	17					
Chip		515	48	532	24	532	24	532	24	532	16	515	48	532	16	512	47	512	61	455	24				
		507	67	499	27	501	31	455	33	492	36	612	37	406	37	515	61	531	40	WHITE					
PROJ. PR. NO. 2	ILL. W	515	30	515	30	515	30	515	18	515	30	515	48	515	30	512	32	515	30	478	32				
	ILL. R-1	515	48	532	24	512	47	532	24	512	47	532	24	512	32	515	40	455	17						
	ILL. R-2	515	61	517	53	515	61	517	53	515	61	517	53	515	61	517	53	515	61	478	22				
	G-1	512	42	512	17	515	12	512	17	512	47	512	47	512	47	515	48	515	27	478	24				
	G-2	512	32	512	17	515	30	512	17	512	47	512	47	512	47	515	48	515	18	478	22				
	Y-1	515	48	512	42	515	30	512	42	515	30	512	42	515	30	512	42	515	30	455	24				
Y-2	515	61	532	24	515	48	532	24	532	24	515	48	532	24	512	32	512	60	532	24					
Chip		515	48	532	24	515	30	532	16	532	24	515	61	515	48	512	32	515	48	455	24				
		507	67	499	27	501	31	455	33	492	36	612	37	406	37	515	61	531	40	WHITE					
PROJ. PR. NO. 3	ILL. W	512	47	512	17	512	32	512	17	512	17	512	32	512	17	512	32	512	17	512	17				
	ILL. R-1	515	48	455	17	515	30	515	30	455	24	515	48	512	17	512	17	515	30	512	17				
	ILL. R-2	515	61	612	28	515	61	515	61	612	28	515	61	612	28	515	61	515	61	478	22				
	G-1	512	32	512	17	512	17	512	17	512	17	512	17	512	17	512	17	512	17	512	17				
	G-2	512	35	478	13	512	17	512	17	512	17	512	17	512	17	512	17	512	17	512	17				
	Y-1	515	30	515	18	515	30	515	18	515	18	515	30	515	18	515	18	515	30	515	18				
Y-2	515	61	512	17	515	30	512	17	515	30	512	17	515	30	512	17	515	30	512	17					
Chip		515	48	512	18	515	48	515	18	455	24	515	48	512	17	512	47	515	48	512	17				
		507	67	499	27	501	31	455	33	492	36	612	37	406	37	515	61	531	40	WHITE					
PROJ. PR. NO. 4	ILL. W	512	47	512	32	512	47	512	32	512	17	512	32	512	17	512	32	512	17	512	17				
	ILL. R-1	515	54	455	17	512	32	512	32	455	17	512	47	455	17	512	32	455	17	512	17				
	ILL. R-2	515	62	515	62	515	62	515	62	515	62	515	62	515	62	515	62	515	62	515	62				
	G-1	515	40	512	17	515	27	515	12	512	17	515	27	478	5	515	12	515	6	512	17				
	G-2	512	17	478	6	512	17	512	17	478	6	512	17	478	6	512	17	512	17	478	6				
	Y-1	515	30	478	15	515	30	515	30	478	15	515	30	478	15	515	30	515	30	478	15				
Y-2	515	61	515	30	515	48	515	30	478	17	515	61	515	30	515	61	515	48	515	30					
Chip		515	61	515	30	515	48	515	30	478	17	515	61	515	30	515	48	515	30	478	17				
		507	67	499	27	501	31	455	33	492	36	612	37	406	37	515	61	531	40	WHITE					
PROJ. PR. NO. 5	ILL. W	512	47	512	32	512	32	512	32	512	32	512	47	512	32	512	32	512	32	512	32				
	ILL. R-1	515	60	512	32	515	48	512	32	512	32	515	48	512	32	515	48	512	32	512	32				
	ILL. R-2	515	48	515	48	515	48	515	48	515	48	515	48	515	48	515	48	515	48	515	48				
	G-1	512	30	512	10	512	17	512	17	512	17	512	17	512	17	512	17	512	17	512	17				
	G-2	512	47	512	32	512	47	512	32	512	17	512	47	512	17	512	47	512	17	512	17				
	Y-1	515	61	515	30	515	48	515	30	515	48	515	61	515	30	515	48	515	30	515	48				
Y-2	515	61	515	30	515	48	515	30	515	48	515	61	515	30	515	48	515	30	515	48					

TABLE 38

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

Wavelength (λ) and Excitation Purity (Pe): narrowband slide film																			
1		2		3		4		5		6		7		8		9		back	
λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
RESPONSES																			
AMB. ILL. W		512	47	512	32	512	32	512	17	512	32	512	17	512	32	512	17	506	17
R-1	515	61	492	15	515	48	515	16	512	47	512	17	512	32	515	48	512	24	
R-2	515	61	512	32	515	48	512	32	515	61	512	32	515	30	512	32	515	24	
G-1	515	48	512	32	515	48	512	32	515	42	45	17	512	32	512	32	512	24	
G-2	506	17	512	32	512	32	512	11	512	47	512	11	512	17	512	17	512	24	
Y-1	515	61	512	32	515	48	515	48	512	32	512	11	512	17	512	32	492	17	
Y-2	515	48	512	32	515	48	515	30	512	17	515	61	512	47	512	30	512	31	
Chip	507	61	499	27	506	31	495	33	492	36	612	37	406	37	515	61	501	40	
RESPONSES																			
AMB. ILL. W		512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35
R-1	515	40	612	18	515	40	515	27	612	18	515	40	515	27	515	42	515	27	
R-2	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
G-1	411	6	461	24	461	12	461	24	512	20	515	27	512	15	512	32	492	22	
G-2	515	12	512	32	515	12	512	32	515	12	512	32	515	18	515	12	512	31	
Y-1	515	42	512	32	515	42	512	32	515	42	512	32	515	42	512	32	512	31	
Y-2	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
Chip	507	61	499	27	506	31	495	33	492	36	612	37	406	37	515	61	501	40	
RESPONSES																			
AMB. ILL. W		512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35
R-1	515	40	612	18	515	40	515	27	612	18	515	40	515	27	515	42	515	27	
R-2	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
G-1	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
G-2	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
Y-1	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
Y-2	515	27	512	32	515	27	512	32	515	27	512	32	515	27	512	32	515	27	
Chip	507	61	499	27	506	31	495	33	492	36	612	37	406	37	515	61	501	40	
RESPONSES																			
AMB. ILL. W		512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35
R-1	515	40	612	18	515	40	515	27	612	18	515	40	515	27	515	42	515	27	
R-2	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
G-1	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
G-2	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
Y-1	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
Y-2	515	27	512	32	515	27	512	32	515	27	512	32	515	27	512	32	515	27	
Chip	507	61	499	27	506	31	495	33	492	36	612	37	406	37	515	61	501	40	
RESPONSES																			
AMB. ILL. W		512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35
R-1	515	40	612	18	515	40	515	27	612	18	515	40	515	27	515	42	515	27	
R-2	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
G-1	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
G-2	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
Y-1	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
Y-2	515	27	512	32	515	27	512	32	515	27	512	32	515	27	512	32	515	27	
Chip	507	61	499	27	506	31	495	33	492	36	612	37	406	37	515	61	501	40	
RESPONSES																			
AMB. ILL. W		512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35
R-1	515	40	612	18	515	40	515	27	612	18	515	40	515	27	515	42	515	27	
R-2	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
G-1	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
G-2	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
Y-1	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
Y-2	515	27	512	32	515	27	512	32	515	27	512	32	515	27	512	32	515	27	
Chip	507	61	499	27	506	31	495	33	492	36	612	37	406	37	515	61	501	40	
RESPONSES																			
AMB. ILL. W		512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35
R-1	515	40	612	18	515	40	515	27	612	18	515	40	515	27	515	42	515	27	
R-2	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
G-1	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
G-2	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	512	35	
Y-1	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	40	
Y-2	515	27	512	32	515	27	512	32	515	27	512	32	515	27	512	32	515	27	
Chip	507	61	499	27	506	31	495	33	492	36	612	37	406	37	515	61	501	40	

TABLE 39

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 11	ILL. W	577.18	577.18	577.18	577.18	577.18	577.18	577.18	577.18	577.18	499.6
	ILL. R-1	575.54	576.17	575.27	575.12	576.17	575.40	576.16	575.54	575.40	492.9
	ILL. R-2	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	574.15
	G-1	612.28	576.17	575.27	573.5	576.17	575.40	576.17	575.40	575.40	574.9
	G-2	573.10	574.5	577.8	574.2	574.5	577.18	573.10	577.18	577.8	573.20
	Y-1	573.62	573.21	573.42	573.21	573.21	573.42	573.21	573.42	573.21	573.42
	Y-2	575.40	573.62	577.35	575.27	612.18	575.40	612.18	573.42	573.42	573.42
Chip		575.27	573.42	577.35	575.27	573.42	573.42	612.18	573.42	573.42	573.42
PROJ. PR. NO. 12	ILL. W	577.53	577.18	577.35	577.35	577.35	577.53	577.35	577.53	577.35	576.54
	ILL. R-1	575.54	576.17	575.27	575.40	612.9	575.40	612.18	575.54	575.40	574.9
	ILL. R-2	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	574.3
	G-1	575.27	577.35	575.27	577.18	576.17	575.40	576.17	575.40	575.40	574.9
	G-2	575.12	573.10	575.12	573.10	574.5	575.12	573.10	575.12	573.10	574.9
	Y-1	573.78	573.21	573.42	573.42	573.21	573.62	573.21	573.42	573.21	573.42
	Y-2	575.54	577.35	575.40	575.27	576.17	575.54	612.18	577.35	577.35	574.9
Chip		575.27	573.42	577.35	575.27	573.42	573.42	612.18	573.42	573.42	573.42
PROJ. PR. NO. 13	ILL. W	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42
	ILL. R-1	575.54	576.17	575.27	575.40	576.17	575.40	576.17	575.40	575.40	574.9
	ILL. R-2	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	574.3
	G-1	575.27	577.35	575.27	577.18	576.17	575.40	576.17	575.40	575.40	574.9
	G-2	575.12	573.10	575.12	573.10	574.5	575.12	573.10	575.12	573.10	574.9
	Y-1	573.78	573.21	573.42	573.42	573.21	573.62	573.21	573.42	573.21	573.42
	Y-2	575.54	577.35	575.40	575.27	576.17	575.54	612.18	577.35	577.35	574.9
Chip		575.27	573.42	577.35	575.27	573.42	573.42	612.18	573.42	573.42	573.42
PROJ. PR. NO. 14	ILL. W	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42
	ILL. R-1	575.54	576.17	575.27	575.40	576.17	575.40	576.17	575.40	575.40	574.9
	ILL. R-2	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	574.3
	G-1	575.27	577.35	575.27	577.18	576.17	575.40	576.17	575.40	575.40	574.9
	G-2	575.12	573.10	575.12	573.10	574.5	575.12	573.10	575.12	573.10	574.9
	Y-1	573.78	573.21	573.42	573.42	573.21	573.62	573.21	573.42	573.21	573.42
	Y-2	575.54	577.35	575.40	575.27	576.17	575.54	612.18	577.35	577.35	574.9
Chip		575.27	573.42	577.35	575.27	573.42	573.42	612.18	573.42	573.42	573.42
PROJ. PR. NO. 15	ILL. W	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42	573.42
	ILL. R-1	575.54	576.17	575.27	575.40	576.17	575.40	576.17	575.40	575.40	574.9
	ILL. R-2	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	575.40	574.3
	G-1	575.27	577.35	575.27	577.18	576.17	575.40	576.17	575.40	575.40	574.9
	G-2	575.12	573.10	575.12	573.10	574.5	575.12	573.10	575.12	573.10	574.9
	Y-1	573.78	573.21	573.42	573.42	573.21	573.62	573.21	573.42	573.21	573.42
	Y-2	575.54	577.35	575.40	575.27	576.17	575.54	612.18	577.35	577.35	574.9
Chip		575.27	573.42	577.35	575.27	573.42	573.42	612.18	573.42	573.42	573.42

TABLE 40

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

	1		2		3		4		5		6		7		8		9		back	
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 16																				
AMB. ILL. W	583	21	583	10	583	21	583	10	583	10	583	21	583	10	583	62	583	10	583	30
Q-R-1	583	21	458	8	458	8	458	17	478	22	583	10	458	8	583	27	458	8	583	6
Q-R-2	583	40	583	40	583	40	583	40	583	40	583	40	583	40	583	40	583	40	583	32
Q-1	583	12	478	11	583	6	478	11	478	27	583	12	478	5	583	6	612	4	583	17
Q-2	458	4	583	8	583	4	478	6	583	11	478	4	583	53	583	42	478	4	583	62
Y-1	583	10	583	11	583	10	583	11	583	11	583	10	583	11	583	42	583	10	583	48
Y-2	612	18	583	8	583	17	458	17	583	8	583	24	583	8	583	24	583	24	583	10
Chip	583	16	458	17	583	24	478	11	478	24	583	24	478	25	583	17	458	8	583	8
PROJ. PR. NO. 17																				
AMB. ILL. W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	30	572	11	572	32
Q-R-1	583	10	458	8	458	4	458	17	458	17	583	10	458	8	612	9	583	10	583	10
Q-R-2	583	27	583	40	583	34	583	40	583	40	583	34	583	40	583	40	583	40	583	35
Q-1	583	12	478	5	583	12	458	4	478	5	612	9	583	17	583	8	583	6	583	17
Q-2	458	4	583	18	612	4	612	9	612	9	583	4	583	12	583	42	583	6	583	62
Y-1	583	21	583	11	583	21	583	11	583	11	583	21	583	11	583	42	583	21	583	30
Y-2	583	42	458	17	583	24	583	24	583	5	583	24	583	16	583	31	583	24	583	8
Chip	583	16	458	8	583	16	583	16	499	3	583	16	499	3	583	17	583	16	583	8
PROJ. PR. NO. 18																				
AMB. ILL. W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	17
Q-R-1	583	42	458	8	583	8	583	17	583	17	458	8	583	21	583	17	583	21	583	8
Q-R-2	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	31
Q-1	583	8	478	5	583	6	478	5	478	5	583	8	583	10	583	17	583	6	583	10
Q-2	478	5	458	4	458	4	583	8	583	10	583	4	583	12	583	11	583	8	583	62
Y-1	583	10	583	11	583	42	583	21	583	11	583	42	583	11	583	11	583	21	583	47
Y-2	612	18	478	12	583	27	478	12	478	5	612	18	612	18	583	24	583	27	583	8
Chip	612	18	583	8	583	16	583	16	583	18	612	18	612	18	583	24	612	18	583	8
PROJ. PR. NO. 19																				
AMB. ILL. W	583	6	583	6	583	6	583	6	583	6	583	6	583	6	583	6	583	6	583	54
Q-R-1	583	8	458	8	458	4	458	8	458	17	478	5	478	24	478	22	583	4	583	24
Q-R-2	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	54
Q-1	583	12	583	18	583	8	583	18	583	11	583	8	583	8	583	5	478	5	583	40
Q-2	458	4	583	8	458	4	612	4	478	5	478	3	583	10	583	11	583	2	583	54
Y-1	583	6	583	10	583	6	583	6	583	12	583	6	583	12	583	12	583	6	583	24
Y-2	458	17	583	17	583	17	583	24	583	17	458	4	583	24	583	24	583	17	583	54
Chip	583	17	458	17	583	4	458	4	583	17	583	17	583	17	583	17	458	4	583	54
PROJ. PR. NO. 20																				
AMB. ILL. W	583	6	583	6	583	6	583	6	583	6	583	6	583	6	583	6	583	6	583	27
Q-R-1	478	5	583	8	478	5	478	11	583	17	478	5	583	24	478	24	478	5	583	27
Q-R-2	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	27	583	32
Q-1	583	24	583	18	478	12	478	12	583	35	478	6	583	35	478	17	583	6	583	9
Q-2	458	4	583	10	458	4	583	8	583	12	583	5	583	18	583	11	583	5	583	40
Y-1	583	3	583	6	583	6	583	6	583	6	583	3	583	6	583	3	583	6	583	19
Y-2	458	4	583	17	583	17	583	17	583	31	458	4	583	31	458	31	458	31	583	27
Chip	583	24	478	12	478	12	583	24	478	12	583	24	478	12	583	24	478	12	583	40

TABLE #4

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	R-1	455	4	566	8	566	4	566	8	566	17	—	566	24	566	25	566	8	566	12	
	R-2	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	11	575	27	575	17
	Q-1	477	5	477	6	477	5	477	6	477	5	477	5	477	4	477	25	477	5	477	4
	Q-2	477	3	477	9	477	6	477	6	477	6	477	12	477	6	477	11	477	10	477	42
	Y-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Y-2	477	3	477	3	477	3	477	3	477	3	477	3	477	3	477	11	477	2	477	12	
Chip		477	6	566	17	477	12	477	12	566	24	477	12	566	24	477	24	477	12	566	6
PROJ. PR. No. 22	W	566	17	566	17	566	17	566	17	566	17	566	17	566	17	566	17	566	17	566	17
	R-1	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30
	R-2	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30
	Q-1	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30
	Q-2	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30
	Y-1	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30
Y-2	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	
Chip		575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30
PROJ. PR. No. 23	W	566	8	566	8	566	8	566	8	566	8	566	8	566	8	566	8	566	8	566	8
	R-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	R-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Q-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Q-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Y-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
Y-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	
Chip		575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
PROJ. PR. No. 24	W	566	21	566	21	566	21	566	21	566	21	566	21	566	21	566	21	566	21	566	21
	R-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	R-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Q-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Q-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Y-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
Y-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	
Chip		575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
PROJ. PR. No. 25	W	566	11	566	11	566	11	566	11	566	11	566	11	566	11	566	11	566	11	566	11
	R-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	R-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Q-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Q-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
	Y-1	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35
Y-2	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	575	35	

TABLE 42

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 26	AMB. ILL. Σ W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	8
	Y-1	575	12	455	17	478	11	481	12	481	36	492	12	481	24	492	19	481	12	575	6
	Y-2	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	17
	G-1	617	28	488	25	575	40	481	24	478	22	575	27	478	11	575	27	575	12	478	3
	G-2	488	6	481	12	478	11	478	11	455	8	455	4	575	10	575	27	575	10	575	53
	Y-1	575	21	575	10	575	21	575	10	575	10	575	21	575	21	575	10	575	10	575	15
	Y-2	575	21	575	21	575	27	575	27	575	27	575	35	612	18	575	27	575	27	575	6
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	575	40	WHITE	
PROJ. PR. No. 27	AMB. ILL. Σ W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	Y-1	672	9	455	8	566	8	566	8	478	11	492	12	478	22	605	18	566	8	575	10
	Y-2	575	40	575	27	575	27	575	27	575	27	575	40	575	27	575	27	575	27	575	31
	G-1	612	4	488	7	575	6	478	7	478	11	455	4	455	8	455	4	575	10	478	3
	G-2	575	2	478	6	575	2	575	2	575	11	575	5	575	5	575	18	575	5	575	42
	Y-1	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	4
	Y-2	575	21	575	2	575	18	575	18	575	35	575	16	575	16	575	27	575	27	575	10
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	575	40	WHITE	
PROJ. PR. No. 28	AMB. ILL. Σ W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	Y-1	672	9	455	8	566	8	566	8	478	11	492	12	478	22	605	18	566	8	575	10
	Y-2	575	40	575	27	575	27	575	27	575	27	575	40	575	27	575	27	575	27	575	31
	G-1	612	4	488	7	575	6	478	7	478	11	455	4	455	8	455	4	575	10	478	3
	G-2	575	2	478	6	575	2	575	2	575	11	575	5	575	5	575	18	575	5	575	42
	Y-1	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	4
	Y-2	575	21	575	2	575	18	575	18	575	35	575	16	575	16	575	27	575	27	575	10
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	575	40	WHITE	
PROJ. PR. No. 29	AMB. ILL. Σ W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	Y-1	672	9	455	8	566	8	566	8	478	11	492	12	478	22	605	18	566	8	575	10
	Y-2	575	40	575	27	575	27	575	27	575	27	575	40	575	27	575	27	575	27	575	31
	G-1	612	4	488	7	575	6	478	7	478	11	455	4	455	8	455	4	575	10	478	3
	G-2	575	2	478	6	575	2	575	2	575	11	575	5	575	5	575	18	575	5	575	42
	Y-1	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	4
	Y-2	575	21	575	2	575	18	575	18	575	35	575	16	575	16	575	27	575	27	575	10
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	575	40	WHITE	

TABLE 43

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair P

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	ILL. W	575	48	575	62	575	48	575	30	575	62	575	48	575	62	575	32	575	62	478	32
	ILL. R-1	575	60	575	32	575	32	575	32	575	60	575	32	575	32	575	60	575	32	478	24
	ILL. R-2	575	61	575	19	575	61	575	62	575	19	575	61	575	62	575	30	575	62	478	36
	Q-1	575	35	575	16	575	53	575	16	575	24	575	42	575	16	575	30	575	8	478	32
	Q-2	575	35	575	17	575	22	575	18	575	18	575	47	575	15	575	32	575	16	478	24
	Y-1	575	48	575	53	575	48	575	35	575	53	575	20	575	53	575	18	575	53	478	41
	Y-2	575	61	575	32	575	48	575	24	575	32	575	61	575	32	575	60	575	32	478	22
Chip		575	48	575	32	575	30	575	24	575	32	575	48	575	32	575	47	575	24	478	32
PROJ. PR. No. 2	ILL. W	575	48	575	53	575	48	575	53	575	48	575	53	575	17	575	53	478	32		
	ILL. R-1	575	48	575	32	575	32	575	24	575	60	575	32	575	47	575	24	478	25		
	ILL. R-2	575	42	575	24	575	42	575	18	575	42	575	24	575	32	575	24	478	36		
	Q-1	575	35	575	17	575	18	575	8	575	17	575	32	575	17	575	45	8	478	36	
	Q-2	575	30	575	53	575	20	575	35	575	30	575	53	575	32	575	53	478	26		
	Y-1	575	61	575	32	575	48	575	32	575	61	575	32	575	60	575	61	575	32	478	36
	Y-2	575	35	575	32	575	17	575	24	575	32	575	35	575	32	575	47	575	24	478	36
Chip		575	48	575	32	575	30	575	24	575	32	575	48	575	32	575	47	575	24	478	36
PROJ. PR. No. 3	ILL. W	575	17	575	35	575	17	575	35	575	17	575	35	575	17	575	35	575	17		
	ILL. R-1	575	48	575	42	575	30	575	30	575	48	575	24	575	32	575	8	478	8		
	ILL. R-2	575	62	575	24	575	62	575	24	575	62	575	24	575	62	575	24	478	27		
	Q-1	575	35	575	47	575	17	575	2	575	47	575	35	575	17	575	32	478	12	478	22
	Q-2	575	30	575	16	575	30	575	8	575	16	575	30	575	16	575	30	575	16	575	24
	Y-1	575	61	575	24	575	30	575	24	575	61	575	24	575	30	575	61	575	24	575	17
	Y-2	575	30	575	31	575	18	575	24	575	30	575	31	575	18	575	47	575	24	575	17
Chip		575	48	575	32	575	30	575	24	575	32	575	48	575	32	575	47	575	24	478	36
PROJ. PR. No. 4	ILL. W	575	17	575	4	575	17	575	4	575	17	575	4	575	32	575	4	575	17		
	ILL. R-1	575	40	575	24	575	32	575	24	575	40	575	24	575	32	575	40	575	24		
	ILL. R-2	575	53	575	18	575	53	575	18	575	53	575	18	575	53	575	18	575	53		
	Q-1	575	40	575	8	575	27	575	17	575	40	575	8	575	27	575	17	575	40		
	Q-2	575	17	575	24	575	10	575	6	575	17	575	24	575	10	575	6	575	17		
	Y-1	575	20	575	16	575	30	575	11	575	20	575	16	575	30	575	11	575	20		
	Y-2	575	61	575	24	575	30	575	24	575	61	575	24	575	30	575	61	575	24		
Chip		575	48	575	32	575	30	575	24	575	32	575	48	575	32	575	47	575	24	478	36
PROJ. PR. No. 5	ILL. W	575	32	575	17	575	32	575	17	575	32	575	17	575	32	575	17	575	32		
	ILL. R-1	575	61	575	30	575	48	575	18	575	61	575	30	575	48	575	18	575	61		
	ILL. R-2	575	40	575	8	575	27	575	17	575	40	575	8	575	27	575	17	575	40		
	Q-1	575	21	575	5	575	17	575	6	575	21	575	5	575	17	575	6	575	21		
	Q-2	575	60	575	11	575	32	575	11	575	60	575	11	575	32	575	11	575	60		
	Y-1	575	60	575	32	575	60	575	32	575	60	575	32	575	60	575	32	575	60		
	Y-2	575	60	575	32	575	60	575	32	575	60	575	32	575	60	575	32	575	60		
Chip		575	48	575	32	575	30	575	24	575	32	575	48	575	32	575	47	575	24	478	36

TABLE 44

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 6	W	575	30	455	4	575	30	575	18	455	4	575	30	455	4	575	17	455	4	455	24
	ILL. W	575	48	455	17	575	48	575	30	455	17	575	48	455	17	575	32	575	48	455	31
	R-1	575	61	472	30	575	61	575	62	472	30	575	62	472	30	575	32	472	30	472	32
	R-2	575	62	455	17	575	42	575	42	575	17	575	62	575	17	575	32	575	42	455	17
	Q-1	575	35	472	6	575	10	575	5	472	9	575	35	472	12	575	32	575	42	575	24
	Q-2	575	37	575	4	575	17	575	4	575	4	575	32	575	4	575	17	575	4	575	24
	Y-1	575	61	575	30	575	48	575	30	575	24	575	61	575	32	575	60	575	24	455	17
	Y-2	575	48	575	24	575	30	575	17	575	24	575	48	575	16	575	47	575	17	575	17
Chip		575	61	472	27	575	31	472	33	472	36	612	37	472	37	575	61	575	40	575	40
PROJ. PR. No. 7	W	575	42	575	42	575	42	575	42	575	42	575	42	575	42	575	42	575	42	575	42
	ILL. W	575	35	575	35	575	27	575	27	575	42	575	27	612	18	575	47	612	18	472	20
	R-1	575	40	575	57	575	40	575	40	575	40	575	40	575	40	575	27	575	40	575	43
	R-2	575	27	612	18	575	27	575	27	612	18	612	18	575	40	575	47	575	40	575	9
	Q-1	575	10	612	4	575	12	575	6	612	4	575	10	575	10	575	10	575	10	575	31
	Q-2	575	62	575	62	575	62	575	42	575	42	575	62	575	62	575	62	575	62	575	20
	Y-1	575	53	575	62	575	42	575	42	575	35	575	42	575	42	575	5	575	27	575	15
	Y-2	575	42	575	27	575	62	575	35	575	35	575	42	575	27	575	42	575	42	575	20
Chip		575	61	472	27	575	31	472	33	472	36	612	37	472	37	575	61	575	40	575	40
PROJ. PR. No. 8	W	575	42	575	21	575	42	575	21	575	42	575	21	575	32	575	42	575	32	575	35
	ILL. W	575	27	575	42	575	35	575	35	575	17	575	35	575	17	575	47	575	35	575	5
	R-1	575	53	575	40	575	30	575	35	575	53	575	40	575	30	575	53	575	40	575	43
	R-2	575	40	612	28	575	40	575	27	472	15	575	12	575	40	575	47	575	40	575	20
	Q-1	575	18	472	13	575	4	472	6	472	13	612	9	472	12	575	30	472	5	472	22
	Q-2	575	62	575	10	575	42	575	42	575	10	575	42	575	10	575	30	575	42	575	32
	Y-1	575	35	575	12	575	42	575	42	575	35	575	42	575	35	575	6	575	42	575	9
	Y-2	575	35	575	16	575	42	575	42	575	21	575	35	575	21	575	47	575	42	575	20
Chip		575	61	472	27	575	31	472	33	472	36	612	37	472	37	575	61	575	40	575	40
PROJ. PR. No. 9	W	575	2	575	9	575	5	575	9	575	9	575	2	575	9	575	42	575	9	575	4
	ILL. W	575	40	472	24	472	13	472	25	472	27	575	27	472	37	575	61	472	37	472	7
	R-1	575	40	575	6	575	27	575	6	575	6	575	27	575	6	575	61	575	12	575	20
	R-2	575	54	472	37	472	13	472	25	472	37	575	54	472	25	575	54	472	13	472	4
	Q-1	575	18	472	12	575	21	575	5	472	13	575	12	575	9	575	40	472	13	575	53
	Q-2	575	42	575	10	575	8	575	8	575	8	575	42	575	8	575	40	575	5	575	17
	Y-1	575	42	472	25	575	21	472	25	472	37	575	42	472	37	575	31	472	25	472	7
	Y-2	575	42	472	37	472	12	472	37	472	37	575	42	472	37	575	61	472	25	472	4
Chip		575	61	472	27	575	31	472	33	472	36	612	37	472	37	575	61	575	40	575	40
PROJ. PR. No. 10	W	575	21	575	5	575	21	575	5	575	5	575	21	575	5	575	42	575	5	575	5
	ILL. W	575	35	472	12	575	16	472	8	472	25	575	24	472	25	612	37	472	25	472	6
	R-1	575	53	472	35	472	35	472	18	472	18	472	53	472	18	575	48	472	35	575	20
	R-2	575	27	472	11	575	27	472	5	472	11	575	12	472	4	575	27	575	12	575	2
	Q-1	575	10	575	9	575	10	575	10	472	13	575	12	575	9	575	42	575	5	575	20
	Q-2	575	5	575	5	575	5	575	5	575	20	575	10	575	20	575	61	575	10	575	3
	Y-1	575	27	472	6	575	35	575	21	472	3	575	20	472	3	575	27	575	42	472	6
	Y-2	575	27	472	13	575	27	472	7	472	13	575	27	472	13	575	30	472	13	472	7

TABLE 45

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 11	AMB. ILL. W	573	42	573	10	573	42	573	10	573	10	573	42	573	10	573	32	573	10	573	5
	R-1	577	35	577	8	577	16	577	16	577	27	577	27	577	27	577	62	577	35	577	12
	R-2	577	53	577	53	577	53	577	35	577	35	577	53	577	53	577	53	577	53	577	20
	G-1	577	35	577	27	577	35	577	35	577	35	577	12	577	27	577	48	577	48	577	3
	G-2	573	10	574	5	573	10	574	5	574	9	575	12	573	10	573	42	573	17	573	35
	Y-1	573	62	573	10	573	42	573	10	573	10	573	42	573	10	573	48	573	11	573	9
	Y-2	573	42	573	35	573	35	573	35	573	35	573	62	573	35	573	6	573	53	573	12
Chip		577	35	573	42	577	35	573	16	573	21	577	35	573	42	577	35	573	35	573	12
PROJ. PR. NO. 12	AMB. ILL. W	573	62	573	21	573	62	573	21	573	21	573	62	573	21	573	30	573	42	573	35
	R-1	577	35	577	17	577	16	577	8	577	8	577	27	577	17	577	35	577	16	577	9
	R-2	577	62	577	53	577	53	577	53	577	53	577	53	577	53	577	48	577	53	577	23
	G-1	575	57	577	53	575	40	577	35	577	53	575	6	577	35	575	48	575	6	575	20
	G-2	577	18	574	5	577	18	574	5	574	9	577	18	573	20	575	41	573	4	575	18
	Y-1	573	78	573	21	573	62	573	42	573	21	573	42	573	21	575	48	573	62	573	35
	Y-2	577	53	573	62	577	35	573	62	573	10	612	24	577	35	573	42	612	24	577	25
Chip		577	40	573	42	612	24	577	35	573	42	612	24	612	18	575	48	573	62	573	31
PROJ. PR. NO. 13	AMB. ILL. W	573	42	573	10	573	21	573	5	573	10	573	42	573	5	573	62	573	5	573	17
	R-1	577	35	577	18	577	24	577	18	577	20	577	24	577	27	577	37	577	12	577	10
	R-2	577	53	577	62	577	35	577	35	577	21	577	53	577	21	575	48	577	27	577	43
	G-1	575	57	577	11	575	27	577	11	577	22	575	40	577	11	575	57	577	8	577	20
	G-2	577	18	577	13	577	8	574	5	577	13	575	12	577	13	577	53	577	9	573	42
	Y-1	573	62	577	10	573	62	577	5	573	20	573	62	577	20	575	61	577	10	573	42
	Y-2	573	40	573	8	573	18	573	16	575	40	576	17	575	40	576	35	575	37	573	10
Chip		575	27	573	27	612	18	573	18	573	27	612	18	573	27	573	53	573	18	573	8
PROJ. PR. NO. 14	AMB. ILL. W	573	62	573	6	573	62	573	21	573	17	573	62	573	17	573	62	573	42	573	35
	R-1	577	27	573	8	612	18	577	12	577	18	577	22	577	9	573	24	577	24	577	9
	R-2	577	68	577	35	575	27	577	27	575	27	577	53	577	35	573	62	577	53	577	43
	G-1	575	12	577	6	575	12	575	6	577	6	575	6	577	6	573	4	575	6	577	9
	G-2	577	18	574	9	573	21	574	5	574	9	577	18	577	20	577	35	577	10	573	57
	Y-1	573	62	576	17	573	62	576	17	576	57	573	62	576	57	575	18	576	57	576	57
	Y-2	575	40	576	8	612	24	573	42	576	8	575	40	576	8	575	57	612	24	574	9
Chip		577	35	573	8	577	35	576	8	576	17	575	40	576	8	575	27	612	24	574	9
PROJ. PR. NO. 15	AMB. ILL. W	573	62	573	42	573	62	573	42	573	21	573	62	573	21	573	62	573	62	573	31
	R-1	575	27	573	42	577	35	577	35	573	10	575	27	573	5	576	17	612	24	574	9
	R-2	577	68	577	53	577	53	577	53	577	53	577	53	577	53	575	30	575	40	577	15
	G-1	575	6	577	35	577	18	577	35	573	42	575	27	577	35	573	62	577	18	577	9
	G-2	577	18	577	20	573	21	577	10	574	5	575	12	577	20	573	42	576	17	576	57
	Y-1	573	53	577	18	577	35	577	18	577	8	577	35	577	18	575	48	577	18	577	31
	Y-2	575	57	577	53	575	40	577	53	573	62	575	57	577	35	573	21	612	24	574	9
Chip		575	27	577	35	577	35	575	27	612	18	573	42	575	27	612	18	577	35	577	20

TABLE 46

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16	ILL. M	583	21	566	17	583	10	566	17	566	35	583	21	581	5	583	62	551	5	575	48
	R-1	612	18	574	9	566	8	499	6	574	9	566	24	574	9	586	32	574	9	573	21
	R-2	575	54	575	27	575	40	575	27	575	27	575	40	575	12	583	62	575	12	572	32
	G-1	575	12	566	35	575	12	566	25	566	35	575	27	566	35	575	40	566	54	575	48
	G-2	583	10	551	10	551	5	574	2	566	17	575	0	551	10	575	42	566	17	577	64
	Y-1	573	62	573	10	583	42	583	21	583	10	583	42	573	21	575	53	583	10	573	78
	Y-2	472	12	499	13	574	5	499	6	499	20	566	24	499	13	566	31	499	13	573	10
Chip		583	42	499	13	566	17	499	13	499	20	566	24	499	13	575	40	499	13	573	21
PROJ. PR. No. 17	ILL. M	583	21	566	17	566	17	566	17	583	21	566	8	583	42	566	8	575	30		
	R-1	583	10	574	5	566	8	574	2	571	10	566	17	574	5	586	32	574	2	573	21
	R-2	612	25	612	25	612	25	612	25	612	25	612	25	612	25	612	25	612	25	572	32
	G-1	575	6	551	10	581	1	551	5	566	35	575	6	566	17	577	35	577	8	575	30
	G-2	499	4	499	6	499	3	512	4	455	4	455	4	455	6	571	35	571	10	573	78
	Y-1	579	21	583	10	583	21	573	10	551	5	573	42	551	5	573	42	551	5	575	48
	Y-2	499	12	574	5	566	24	566	17	574	5	566	24	574	5	566	31	566	17	566	17
Chip		586	16	499	13	586	16	499	6	499	20	566	24	499	13	586	24	499	6	575	48
PROJ. PR. No. 18	ILL. M	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	R-1	583	10	577	18	577	8	577	18	575	12	577	18	573	21	478	5	583	10	551	5
	R-2	612	25	612	25	612	25	612	25	612	25	612	25	612	25	612	25	612	25	574	20
	G-1	577	18	573	21	575	12	577	18	577	18	575	6	577	18	575	18	575	6	551	5
	G-2	574	2	478	3	478	6	478	6	612	7	478	6	577	18	575	11	612	4	451	30
	Y-1	577	18	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	Y-2	573	42	577	35	575	27	612	18	612	18	478	12	577	35	566	24	573	42	551	5
Chip		586	16	573	42	586	16	573	42	586	16	573	42	586	16	573	42	586	16	573	42
PROJ. PR. No. 19	ILL. M	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	10	575	54
	R-1	478	5	455	8	455	4	455	8	478	11	455	4	455	8	478	22	—	—	612	28
	R-2	478	6	478	6	478	6	478	6	478	6	478	6	478	6	478	6	478	6	478	19
	G-1	583	10	577	8	577	8	577	8	575	10	577	8	577	8	575	10	577	8	612	37
	G-2	499	6	575	11	551	10	551	10	577	18	551	5	577	18	575	18	551	5	575	54
	Y-1	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	54
	Y-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chip		586	16	478	24	586	16	478	24	586	16	478	24	586	16	478	24	586	16	478	24
PROJ. PR. No. 20	ILL. M	586	16	573	10	566	8	566	8	573	10	566	8	573	10	573	10	573	10	575	12
	R-1	478	22	586	17	455	17	455	8	586	24	455	8	586	16	455	37	455	4	575	27
	R-2	575	12	575	40	575	27	575	27	575	27	575	12	575	27	575	10	575	27	575	36
	G-1	577	21	612	18	577	12	577	12	575	40	471	24	575	27	478	37	575	12	575	36
	G-2	574	5	573	21	573	10	577	8	575	6	499	20	573	21	575	18	566	8	575	40
	Y-1	566	8	573	42	573	10	583	10	573	42	573	10	573	42	573	10	573	10	577	53
	Y-2	478	25	586	24	586	17	586	24	586	31	478	25	586	31	478	37	586	24	575	6
Chip		586	24	586	24	586	24	586	24	586	24	586	24	586	24	586	24	586	24	586	24

TABLE 47

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	ILL. W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10
	ILL. R-1	455	4	566	4	566	4	566	8	566	24	481	24	566	17	481	24	566	17	575	6
	ILL. R-2	577	33	575	40	577	53	577	53	575	40	577	53	575	40	577	53	575	40	577	53
	AMB. G-1	478	5	575	12	478	5	455	4	575	12	478	5	575	12	478	5	575	12	478	5
	AMB. G-2	478	3	574	2	478	3	478	3	478	4	612	9	566	8	573	11	566	8	577	35
	Y-1	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10
	Y-2	478	12	566	24	478	11	566	16	566	24	478	12	566	24	478	12	566	24	478	12
Chip		507	67	499	27	561	31	495	33	498	36	612	37	406	37	575	61	577	40	575	61
PROJ. PR. No. 22	ILL. W	572	17	572	32	572	17	572	32	572	47	572	17	572	32	572	11	572	32	572	17
	ILL. R-1	575	30	575	48	575	32	575	48	575	30	575	48	575	30	575	48	575	30	575	48
	ILL. R-2	577	53	575	61	577	53	577	53	575	61	577	53	575	61	577	53	575	61	577	53
	AMB. G-1	566	17	575	42	566	17	566	17	575	30	566	24	571	18	566	31	571	35	566	31
	AMB. G-2	478	3	566	35	571	10	566	17	572	32	574	5	566	35	455	17	566	35	566	24
	Y-1	572	11	572	47	572	17	572	17	572	47	572	11	572	47	572	11	572	47	572	11
	Y-2	575	30	575	61	575	48	575	61	575	61	575	30	575	61	575	61	575	61	575	61
Chip		507	67	499	27	561	31	495	33	498	36	612	37	406	37	575	61	577	40	575	61
PROJ. PR. No. 23	ILL. W	573	62	573	42	573	42	573	42	573	42	573	42	573	42	573	10	573	42	573	42
	ILL. R-1	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48
	ILL. R-2	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53
	AMB. G-1	577	35	577	18	575	27	575	27	575	42	575	27	575	27	577	10	577	8	478	18
	AMB. G-2	577	18	577	35	577	18	577	35	577	18	577	35	577	18	577	35	577	18	577	35
	Y-1	573	62	573	42	573	42	573	42	573	42	573	42	573	42	573	10	573	42	573	42
	Y-2	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48
Chip		507	67	499	27	561	31	495	33	498	36	612	37	406	37	575	61	577	40	575	61
PROJ. PR. No. 24	ILL. W	573	42	573	62	573	42	573	62	573	42	573	62	573	42	573	62	573	42	573	62
	ILL. R-1	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48
	ILL. R-2	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53
	AMB. G-1	577	35	577	18	575	27	575	27	575	42	575	27	575	27	577	10	577	8	478	18
	AMB. G-2	577	18	577	35	577	18	577	35	577	18	577	35	577	18	577	35	577	18	577	35
	Y-1	573	42	573	62	573	42	573	62	573	42	573	62	573	42	573	62	573	42	573	62
	Y-2	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48
Chip		507	67	499	27	561	31	495	33	498	36	612	37	406	37	575	61	577	40	575	61
PROJ. PR. No. 25	ILL. W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10
	ILL. R-1	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48
	ILL. R-2	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53
	AMB. G-1	577	35	577	18	575	27	575	27	575	42	575	27	575	27	577	10	577	8	478	18
	AMB. G-2	577	18	577	35	577	18	577	35	577	18	577	35	577	18	577	35	577	18	577	35
	Y-1	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10
	Y-2	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48	575	30	575	48
Chip		507	67	499	27	561	31	495	33	498	36	612	37	406	37	575	61	577	40	575	61

TABLE 46

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

1	2	3	4	5	6	7	8	9	back
λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe

PROJ. PR. No. 26	ANS. ILL. R-1	583 11 583 10 583 10 583 10 583 10 583 10 583 10 583 10 583 10 583 10
	R-2	583 16 486 25 455 8 486 25 486 37 586 24 486 37 586 21 486 37 583 12
	G-1	587 68 587 35 587 53 587 35 587 35 587 35 587 35 587 35 587 35 587 35
	G-2	587 27 486 24 486 24 486 12 486 12 486 36 587 27 486 24 587 24 486 24 486 24
	Y-1	587 6 587 9 587 10 587 10 587 10 587 10 587 10 587 10 587 10 587 10
	Y-2	587 18 587 8 587 18 587 18 587 18 587 18 587 18 587 18 587 18 587 18
Chip		583 42 486 36 486 17 486 17 486 34 486 36 586 31 486 36 586 32 486 35 587 6
		486 5 486 23 586 17 486 23 486 24 586 24 486 23 486 23 486 23 612 18
		587 67 486 27 586 31 486 33 486 36 612 37 486 37 587 61 587 40 587 40

PROJ. PR. No. 27	ANS. ILL. R-1	583 11 583 10 583 10 583 10 583 10 583 10 583 10 583 10 583 10
	R-2	583 21 486 25 587 18 486 25 486 25 586 16 486 25 586 22 586 17 587 8
	G-1	587 53 587 18 587 35 587 35 587 35 587 18 587 35 587 18 587 35 587 21
	G-2	587 12 486 11 586 48 11 486 22 587 27 486 22 587 12 486 11 486 3
	Y-1	587 10 486 3 587 2 587 2 486 6 486 3 587 10 587 18 587 10 587 35
	Y-2	587 8 587 8 587 8 587 8 587 8 587 8 587 8 587 8 587 53 587 8 587 35
Chip		587 42 486 24 586 17 486 12 486 24 586 24 486 24 586 31 486 12 587 8
		612 18 486 13 486 12 486 13 486 25 586 24 486 25 612 28 486 13 612 4
		587 67 486 27 586 31 486 33 486 36 612 37 486 37 587 61 587 40 587 40

PROJ. PR. No.	ANS. ILL. R-1	587 27 486 27 586 31 486 33 486 36 612 37 486 37 587 61 587 40 587 40
	R-2	
	G-1	
	G-2	
	Y-1	
	Y-2	
Chip		

PROJ. PR. No.	ANS. ILL. R-1	587 27 486 27 586 31 486 33 486 36 612 37 486 37 587 61 587 40 587 40
	R-2	
	G-1	
	G-2	
	Y-1	
	Y-2	
Chip		

PROJ. PR. No.	ANS. ILL. R-1	587 27 486 27 586 31 486 33 486 36 612 37 486 37 587 61 587 40 587 40
	R-2	
	G-1	
	G-2	
	Y-1	
	Y-2	
Chip		

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

[illegible]

TABLE 50

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 6	AMB. ILL. W	572	47	572	32	572	47	572	32	572	47	572	32	572	47	572	32	455	34		
	R-1	575	61	455	17	572	47	572	47	575	61	575	61	575	61	575	61	575	61	455	17
	R-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	Y-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
Chip		572	47	572	32	572	47	572	32	572	47	572	32	572	47	572	32	455	34		
PROJ. PR. No. 7	AMB. ILL. W	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	R-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	R-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	Y-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
Chip		575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
PROJ. PR. No. 8	AMB. ILL. W	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	R-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	R-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	Y-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
Chip		575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
PROJ. PR. No. 9	AMB. ILL. W	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	R-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	R-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	Y-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
Chip		575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
PROJ. PR. No. 10	AMB. ILL. W	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	R-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	R-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	G-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
	Y-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61
Chip		575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61

TABLE 5/

Wavelength (λ) and Excitation Purity (Pe); Narrowband Slide Pair 9

	1	2	3	4	5	6	7	8	9	back
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 11	513	42	513	31	513	42	513	31	513	42
ILL. W	513	42	513	31	513	42	513	31	513	42
R-1	513	42	513	31	513	42	513	31	513	42
R-2	513	42	513	31	513	42	513	31	513	42
G-1	513	42	513	31	513	42	513	31	513	42
G-2	513	42	513	31	513	42	513	31	513	42
Y-1	513	42	513	31	513	42	513	31	513	42
Y-2	513	42	513	31	513	42	513	31	513	42
Chip	513	42	513	31	513	42	513	31	513	42
PROJ. PR. No. 12	513	42	513	31	513	42	513	31	513	42
ILL. W	513	42	513	31	513	42	513	31	513	42
R-1	513	42	513	31	513	42	513	31	513	42
R-2	513	42	513	31	513	42	513	31	513	42
G-1	513	42	513	31	513	42	513	31	513	42
G-2	513	42	513	31	513	42	513	31	513	42
Y-1	513	42	513	31	513	42	513	31	513	42
Y-2	513	42	513	31	513	42	513	31	513	42
Chip	513	42	513	31	513	42	513	31	513	42
PROJ. PR. No. 13	513	42	513	31	513	42	513	31	513	42
ILL. W	513	42	513	31	513	42	513	31	513	42
R-1	513	42	513	31	513	42	513	31	513	42
R-2	513	42	513	31	513	42	513	31	513	42
G-1	513	42	513	31	513	42	513	31	513	42
G-2	513	42	513	31	513	42	513	31	513	42
Y-1	513	42	513	31	513	42	513	31	513	42
Y-2	513	42	513	31	513	42	513	31	513	42
Chip	513	42	513	31	513	42	513	31	513	42
PROJ. PR. No. 14	513	42	513	31	513	42	513	31	513	42
ILL. W	513	42	513	31	513	42	513	31	513	42
R-1	513	42	513	31	513	42	513	31	513	42
R-2	513	42	513	31	513	42	513	31	513	42
G-1	513	42	513	31	513	42	513	31	513	42
G-2	513	42	513	31	513	42	513	31	513	42
Y-1	513	42	513	31	513	42	513	31	513	42
Y-2	513	42	513	31	513	42	513	31	513	42
Chip	513	42	513	31	513	42	513	31	513	42
PROJ. PR. No. 15	513	42	513	31	513	42	513	31	513	42
ILL. W	513	42	513	31	513	42	513	31	513	42
R-1	513	42	513	31	513	42	513	31	513	42
R-2	513	42	513	31	513	42	513	31	513	42
G-1	513	42	513	31	513	42	513	31	513	42
G-2	513	42	513	31	513	42	513	31	513	42
Y-1	513	42	513	31	513	42	513	31	513	42
Y-2	513	42	513	31	513	42	513	31	513	42
Chip	513	42	513	31	513	42	513	31	513	42

TABLE 52

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16	ILL. W	513	21	513	10	513	31	513	10	513	31
	ILL. R-1	513	21	478	11	513	27	513	27	513	27
	ILL. R-2	513	54	513	27	513	40	513	27	513	40
	AMB. G-1	513	12	513	8	513	12	513	12	513	12
	AMB. G-2	513	3	513	8	513	12	513	12	513	12
	Y-1	513	62	513	11	513	42	513	27	513	11
	Y-2	513	42	513	8	513	24	513	21	513	10
Chip		507	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 17	ILL. W	513	11	513	11	513	11	513	11	513	11
	ILL. R-1	513	8	513	8	513	17	513	17	513	17
	ILL. R-2	513	40	513	27	513	40	513	27	513	40
	AMB. G-1	513	12	513	8	513	12	513	12	513	12
	AMB. G-2	513	42	513	11	513	42	513	11	513	42
	Y-1	513	42	513	5	513	17	513	24	513	5
	Y-2	513	16	513	2	513	16	513	5	513	2
Chip		507	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 18	ILL. W	513	11	513	11	513	11	513	11	513	11
	ILL. R-1	513	42	513	21	513	42	513	21	513	42
	ILL. R-2	513	40	513	27	513	40	513	27	513	40
	AMB. G-1	513	6	513	5	513	5	513	5	513	5
	AMB. G-2	513	11	513	11	513	11	513	11	513	11
	Y-1	513	21	513	16	513	16	513	16	513	16
	Y-2	513	16	513	5	513	16	513	5	513	16
Chip		507	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 19	ILL. W	513	12	513	12	513	12	513	12	513	12
	ILL. R-1	513	13	513	12	513	13	513	12	513	13
	ILL. R-2	513	47	513	5	513	47	513	5	513	47
	AMB. G-1	513	6	513	6	513	6	513	6	513	6
	AMB. G-2	513	6	513	6	513	6	513	6	513	6
	Y-1	513	24	513	17	513	24	513	17	513	24
	Y-2	513	8	513	8	513	8	513	8	513	8
Chip		507	67	499	27	561	31	455	33	492	36
PROJ. PR. No. 20	ILL. W	513	12	513	12	513	12	513	12	513	12
	ILL. R-1	513	12	513	12	513	12	513	12	513	12
	ILL. R-2	513	4	513	27	513	4	513	27	513	4
	AMB. G-1	513	12	513	12	513	12	513	12	513	12
	AMB. G-2	513	6	513	6	513	6	513	6	513	6
	Y-1	513	12	513	12	513	12	513	12	513	12
	Y-2	513	7	513	24	513	7	513	24	513	7

TABLE 53

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	AMB. ILL. R-1	566 4	566 4	566 4	566 4	566 4	566 4	566 4	566 4	566 4	566 4
	AMB. ILL. R-2	486 13	566 4	486 13	486 25	566 24	486 25	566 24	486 37	566 24	566 6
	AMB. ILL. G-1	575 12	575 27	575 12	575 12	575 27	575 12	575 27	575 11	575 27	575 5
	AMB. ILL. G-2	486 5	486 4	486 5	486 5	486 4	486 4	486 5	486 24	486 4	486 4
	Y-1	575 10	575 2	575 3	575 3	575 6	575 12	575 10	575 11	575 5	575 35
	Y-2	575 10	575 10	575 10	575 10	575 10	575 10	575 10	575 10	575 10	575 42
PROJ. PR. No. 22	AMB. ILL. R-1	575 17	575 24	575 24	575 24	575 24	575 24	575 24	575 24	575 24	575 6
	AMB. ILL. R-2	575 7	575 17	575 17	575 17	575 17	575 17	575 17	575 24	575 24	575 6
	AMB. ILL. G-1	575 67	575 27	575 31	575 33	575 36	575 37	575 37	575 37	575 37	575 40
	AMB. ILL. G-2	575 17	575 17	575 17	575 17	575 17	575 17	575 17	575 17	575 17	575 17
	Y-1	575 61	575 60	575 60	575 60	575 60	575 60	575 60	575 60	575 60	575 17
	Y-2	575 53	575 62	575 53	575 53	575 62	575 62	575 62	575 62	575 62	575 37
PROJ. PR. No. 23	AMB. ILL. R-1	575 17	575 62	575 62	575 62	575 62	575 62	575 62	575 62	575 62	575 32
	AMB. ILL. R-2	575 4	575 17	575 6	575 6	575 17	575 17	575 17	575 17	575 17	575 15
	AMB. ILL. G-1	575 11	575 32	575 11	575 11	575 32	575 32	575 32	575 32	575 32	575 24
	AMB. ILL. G-2	575 18	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 17
	Y-1	575 30	575 48	575 30	575 30	575 48	575 48	575 48	575 48	575 48	575 17
	Y-2	575 30	575 48	575 30	575 30	575 48	575 48	575 48	575 48	575 48	575 17
PROJ. PR. No. 24	AMB. ILL. R-1	575 67	575 27	575 31	575 33	575 36	575 37	575 37	575 37	575 37	575 40
	AMB. ILL. R-2	575 21	575 21	575 21	575 21	575 21	575 21	575 21	575 21	575 21	575 20
	AMB. ILL. G-1	575 42	575 35	575 8	575 8	575 42	575 42	575 42	575 42	575 42	575 6
	AMB. ILL. G-2	575 40	575 53	575 40	575 53	575 53	575 53	575 53	575 53	575 53	575 15
	Y-1	575 12	575 35	575 18	575 8	575 4	575 18	575 21	575 5	575 10	575 6
	Y-2	575 7	575 10	575 10	575 5	575 12	575 10	575 21	575 5	575 21	575 25
PROJ. PR. No. 25	AMB. ILL. R-1	575 10	575 42	575 10	575 10	575 42	575 42	575 42	575 42	575 42	575 5
	AMB. ILL. R-2	575 42	575 35	575 21	575 21	575 35	575 35	575 35	575 35	575 35	575 42
	AMB. ILL. G-1	575 42	575 62	575 62	575 62	575 62	575 62	575 62	575 62	575 62	575 35
	AMB. ILL. G-2	575 42	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35
	Y-1	575 42	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35
	Y-2	575 35	575 27	575 42	575 24	575 27	575 27	575 27	575 27	575 27	575 15
PROJ. PR. No. 26	AMB. ILL. R-1	575 67	575 27	575 31	575 33	575 36	575 37	575 37	575 37	575 37	575 40
	AMB. ILL. R-2	575 42	575 42	575 42	575 42	575 42	575 42	575 42	575 42	575 42	575 13
	AMB. ILL. G-1	575 35	575 27	575 17	575 42	575 27	575 27	575 27	575 27	575 27	575 6
	AMB. ILL. G-2	575 67	575 40	575 40	575 53	575 53	575 53	575 53	575 53	575 53	575 43
	Y-1	575 12	575 35	575 18	575 35	575 42	575 10	575 42	575 35	575 6	575 9
	Y-2	575 5	575 21	575 10	575 5	575 12	575 10	575 21	575 20	575 18	575 35
PROJ. PR. No. 27	AMB. ILL. R-1	575 40	575 62	575 62	575 62	575 62	575 62	575 62	575 62	575 62	575 35
	AMB. ILL. R-2	575 42	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35
	AMB. ILL. G-1	575 42	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35
	AMB. ILL. G-2	575 42	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35
	Y-1	575 42	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 35
	Y-2	575 35	575 27	575 42	575 24	575 27	575 27	575 27	575 27	575 27	575 15
PROJ. PR. No. 28	AMB. ILL. R-1	575 67	575 27	575 31	575 33	575 36	575 37	575 37	575 37	575 37	575 40
	AMB. ILL. R-2	575 42	575 42	575 42	575 42	575 42	575 42	575 42	575 42	575 42	575 13
	AMB. ILL. G-1	575 35	575 27	575 17	575 42	575 27	575 27	575 27	575 27	575 27	575 6
	AMB. ILL. G-2	575 67	575 40	575 40	575 53	575 53	575 53	575 53	575 53	575 53	575 43
	Y-1	575 12	575 35	575 18	575 35	575 42	575 10	575 42	575 35	575 6	575 9
	Y-2	575 5	575 21	575 10	575 5	575 12	575 10	575 21	575 20	575 18	575 35

TABLE 54

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

1	2	3	4	5	6	7	8	9	back
λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe

PROJ. PR. No. 26	ANS. ILL. W	583 10 583 10 583 10 583 42 583 10 583 10 583 10 583 42 583 10 583 27
	R-1	583 21 486 13 566 17 566 24 486 25 566 24 486 25 566 31 486 25 583 6
	R-2	583 53 583 35 583 53 583 35 583 53 583 35 583 53 583 35 583 53 583 10
	G-1	583 40 455 17 583 27 455 17 566 35 583 27 478 11 583 27 583 6 566 8
	G-2	486 3 583 5 566 17 583 18 583 18 412 9 583 10 583 35 583 10 583 53
	Y-1	583 42 583 10 583 42 583 10 583 21 583 21 583 42 583 21 583 40
	Y-2	583 42 486 25 583 16 583 16 486 25 583 24 486 25 583 24 486 25 583 4
Chip		583 67 499 27 566 31 455 33 492 36 612 37 486 37 575 61 551 40 WHITE

PROJ. PR. No. 27	ANS. ILL. W	583 4 583 4 583 4 583 4 583 4 583 4 583 4 583 4 583 4
	R-1	583 21 486 11 566 17 566 17 486 11 566 24 486 11 566 8 486 17 583 8
	R-2	583 53 583 35 583 35 583 35 583 35 583 35 583 35 583 35 583 35 583 17
	G-1	583 27 583 8 583 27 583 8 583 17 583 27 455 8 583 17 583 6 583 5
	G-2	486 6 583 21 583 21 583 21 583 18 583 18 583 2 583 5 583 8 583 10 583 42
	Y-1	583 18 583 8 583 18 583 8 583 8 583 18 583 8 583 25 583 8 583 8
	Y-2	583 21 486 12 583 16 583 16 486 12 583 16 583 5 583 16 583 17 583 8
Chip		583 67 499 27 566 31 455 33 492 36 612 37 486 37 575 61 551 40 WHITE

PROJ. PR. No.	ANS. ILL. W	583 67 499 27 566 31 455 33 492 36 612 37 486 37 575 61 551 40 WHITE
	R-1	
	R-2	
	G-1	
	G-2	
	Y-1	
	Y-2	
Chip		

PROJ. PR. No.	ANS. ILL. W	583 67 499 27 566 31 455 33 492 36 612 37 486 37 575 61 551 40 WHITE
	R-1	
	R-2	
	G-1	
	G-2	
	Y-1	
	Y-2	
Chip		

PROJ. PR. No.	ANS. ILL. W	583 67 499 27 566 31 455 33 492 36 612 37 486 37 575 61 551 40 WHITE
	R-1	
	R-2	
	G-1	
	G-2	
	Y-1	
	Y-2	
Chip		

TABLE 55

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	W	575 30	575 18	575 30	575 30	575 30	575 18	575 30	575 30	575 30	575 11	575 30	478 22								
	ILL. W	575 48	575 24	575 24	575 30	575 24	575 16	575 24	575 16	575 24	575 32	575 24	478 22								
	R-1	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53	575 53
	R-2	575 42	455 4	575 4	575 21	575 17	575 11	575 18	575 30	575 8	575 11	575 10	478 24								
	G-1	575 8	575 15	575 17	575 11	575 18	575 30	575 8	575 11	575 10	478 24										
	AG-2	575 48	575 42	575 30	575 30	575 62	575 30	575 30	455 24	575 18	455 31										
	Y-1	575 61	575 24	575 61	575 61	575 24	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61	575 61
	Y-2	575 48	575 30	575 48	575 48	575 16	575 61	575 48	575 32	575 48	455 24										
Chip		507 07	409 27	506 31	409 33	408 36	612 37	408 37	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01
PROJ. PR. No. 2	W	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30
	ILL. W	575 61	575 16	575 24	575 16	575 24	575 47	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32
	R-1	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40
	R-2	575 42	575 17	575 21	575 42	575 17	575 8	575 42	575 30	575 24	478 24										
	G-1	575 17	575 2	575 21	575 10	478 6	575 17	575 17	575 11	575 10	478 24										
	AG-2	575 48	575 62	575 62	575 42	575 53	575 48	575 53	478 22	575 53	478 32										
	Y-1	575 61	575 24	575 48	575 24	575 32	575 61	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32
	Y-2	575 48	575 12	575 12	575 30	575 17	575 61	575 48	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32
Chip		507 07	409 27	506 31	409 33	408 36	612 37	408 37	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01
PROJ. PR. No. 3	W	575 18	575 11	575 18	575 18	575 11	575 18	575 18	575 18	575 17	575 18	455 24									
	ILL. W	575 48	575 8	575 30	575 30	575 16	575 30	575 30	575 32	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30
	R-1	575 42	575 40	575 27	575 27	575 40	575 27	575 27	575 30	575 27	575 30	575 27	575 30	575 27	575 30	575 27	575 30	575 27	575 30	575 27	575 30
	R-2	575 42	455 8	575 42	455 17	455 17	575 42	455 8	575 30	575 42	455 17										
	G-1	575 17	575 5	575 17	575 10	478 6	575 35	575 8	575 11	575 10	575 24										
	AG-2	575 30	575 10	575 30	575 30	575 10	575 30	575 10	575 30	575 10	575 30	575 10	575 30	575 10	575 30	575 10	575 30	575 10	575 30	575 10	575 30
	Y-1	575 61	575 24	575 48	575 48	575 24	575 61	575 24	575 30	575 17	575 30	575 17	575 30	575 17	575 30	575 17	575 30	575 17	575 30	575 17	575 30
	Y-2	575 48	575 24	575 30	575 30	575 17	575 48	575 30	575 17	575 30	575 17	575 30	575 17	575 30	575 17	575 30	575 17	575 30	575 17	575 30	575 17
Chip		507 07	409 27	506 31	409 33	408 36	612 37	408 37	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01
PROJ. PR. No. 4	W	575 32	575 17	575 32	575 32	575 17	575 32	575 17	575 32	575 17	575 32	575 17	575 32	575 17	575 32	575 17	575 32	575 17	575 32	575 17	575 32
	ILL. W	575 60	575 16	575 47	575 32	575 24	575 47	575 16	575 27	575 16	575 32	575 16	575 32	575 16	575 32	575 16	575 32	575 16	575 32	575 16	575 32
	R-1	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40
	R-2	575 40	575 8	575 29	575 8	455 17	575 29	575 17	575 40	575 8	575 30	575 40	575 8	575 30	575 40	575 8	575 30	575 40	575 8	575 30	575 40
	G-1	575 17	575 5	575 17	575 8	575 5	575 35	575 8	575 11	575 5	575 30	575 17	575 30	575 5	575 30	575 17	575 30	575 5	575 30	575 17	575 30
	AG-2	575 30	575 18	575 30	575 20	575 18	575 30	575 20	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30
	Y-1	575 61	575 30	575 48	575 30	575 30	575 61	575 48	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30
	Y-2	575 61	575 30	575 61	575 30	575 30	575 61	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30
Chip		507 07	409 27	506 31	409 33	408 36	612 37	408 37	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01
PROJ. PR. No. 5	W	575 47	575 17	575 47	575 47	575 17	575 47	575 17	575 47	575 17	575 47	575 17	575 47	575 17	575 47	575 17	575 47	575 17	575 47	575 17	575 47
	ILL. W	575 47	575 32	575 47	575 47	575 32	575 47	575 32	575 47	575 32	575 47	575 32	575 47	575 32	575 47	575 32	575 47	575 32	575 47	575 32	575 47
	R-1	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40	575 40
	R-2	575 40	575 42	575 40	575 42	575 40	575 42	575 40	575 42	575 40	575 42	575 40	575 42	575 40	575 42	575 40	575 42	575 40	575 42	575 40	575 42
	G-1	575 35	575 30	575 32	575 35	575 30	575 32	575 35	575 30	575 32	575 35	575 30	575 32	575 35	575 30	575 32	575 35	575 30	575 32	575 35	575 30
	AG-2	575 32	575 17	575 32	575 32	575 17	575 32	575 32	575 17	575 32	575 32	575 17	575 32	575 32	575 17	575 32	575 32	575 17	575 32	575 32	575 17
	Y-1	575 61	575 32	575 47	575 32	575 32	575 61	575 47	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32	575 32
	Y-2	575 61	575 48	575 61	575 48	575 48	575 61	575 48	575 48	575 61	575 48	575 48	575 61	575 48	575 48	575 61	575 48	575 48	575 61	575 48	575 48
Chip		507 07	409 27	506 31	409 33	408 36	612 37	408 37	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01	575 01

TABLE 56

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
6	PROJ. PR. NO.																				
	AMB. ILL. W																				
	R-1	572	32	572	17	572	32	572	32	572	17	572	32	572	17	572	17	572	17	455	17
	R-2	575	48	575	30	575	48	575	48	575	32	575	47	575	17	575	8	575	17	575	17
	G-1	571	53	571	53	571	53	571	53	571	53	571	53	571	53	571	53	571	53	571	24
	G-2	573	62	573	45	573	42	573	45	573	17	573	42	573	45	573	32	573	45	573	17
	Y-1	576	17	576	10	576	8	576	8	576	10	576	35	576	8	576	11	576	17	576	24
	Y-2	573	47	573	32	573	42	573	47	573	42	573	47	573	32	573	42	573	47	573	24
7	PROJ. PR. NO.																				
	AMB. ILL. W																				
	R-1	575	40	575	27	575	40	575	40	575	54	575	40	575	40	575	5	575	42	575	31
	R-2	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	35	575	40	575	43
	G-1	575	27	575	35	575	18	575	35	575	42	575	18	575	35	575	30	575	35	575	13
	G-2	573	10	573	12	573	12	573	12	573	10	573	18	573	12	573	9	573	18	573	31
	Y-1	577	33	577	53	577	53	577	53	577	53	577	53	577	53	577	35	577	35	577	15
	Y-2	577	35	577	42	577	53	577	53	577	35	577	35	577	27	577	27	577	27	577	13
8	PROJ. PR. NO.																				
	AMB. ILL. W																				
	R-1	573	21	573	21	573	21	573	21	573	21	573	21	573	21	573	17	573	21	573	10
	R-2	575	27	575	17	575	24	575	24	575	15	575	22	575	17	575	8	575	17	575	6
	G-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	35	575	40	575	31
	G-2	575	27	575	35	575	18	575	42	575	42	575	27	575	27	575	48	575	27	575	6
	Y-1	571	8	571	8	571	10	571	5	571	10	571	18	571	8	571	17	571	8	571	35
	Y-2	573	43	573	21	573	43	573	43	573	43	573	43	573	43	573	35	573	43	573	54
9	PROJ. PR. NO.																				
	AMB. ILL. W																				
	R-1	571	5	571	5	571	5	571	5	571	5	571	5	571	5	571	5	571	5	571	5
	R-2	575	27	575	17	575	24	575	24	575	15	575	22	575	17	575	8	575	17	575	6
	G-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	35	575	40	575	31
	G-2	575	27	575	35	575	18	575	42	575	42	575	27	575	27	575	48	575	27	575	6
	Y-1	571	8	571	8	571	10	571	5	571	10	571	18	571	8	571	17	571	8	571	35
	Y-2	573	43	573	21	573	43	573	43	573	43	573	43	573	43	573	35	573	43	573	54
10	PROJ. PR. NO.																				
	AMB. ILL. W																				
	R-1	575	27	575	24	575	27	575	27	575	27	575	27	575	27	575	18	575	27	575	12
	R-2	575	12	575	42	575	4	575	8	575	4	575	27	575	35	575	18	575	12	575	6
	G-1	575	5	575	5	575	5	575	5	575	5	575	5	575	5	575	11	575	5	575	20
	G-2	573	42	573	10	573	32	573	32	573	10	573	42	573	10	573	42	573	42	573	6
	Y-1	575	27	575	21	575	27	575	27	575	27	575	27	575	27	575	18	575	27	575	7
	Y-2	577	35	577	21	577	35	577	27	577	18	577	42	577	21	577	27	577	42	577	13

TABLE 57

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 11	ILL. W	513	10	513	10	513	10	513	10	513	10	513	10	513	10	513	10	513	10	449	3
	ILL. R-1	515	27	442	12	515	27	612	18	515	27	515	40	612	18	612	18	612	18	442	13
	ILL. R-2	515	27	515	35	515	40	515	35	515	35	515	27	515	27	515	32	515	35	442	6
	G-1	515	8	515	10	515	21	515	10	515	10	515	18	515	10	515	17	515	5	515	20
	G-2	515	42	515	21	515	32	515	42	515	21	515	42	515	21	515	5	515	21	515	5
	Y-1	612	18	515	27	515	42	515	35	515	35	515	27	515	27	515	21	515	27	442	12
	Y-2	513	21	513	42	515	35	515	18	513	42	515	35	515	18	513	21	612	18	442	13
Chip		501	61	499	27	501	31	499	33	492	36	612	37	492	37	513	61	513	40	WAVE	
PROJ. PR. No. 12	ILL. W	513	21	513	21	513	21	513	21	513	21	513	21	513	21	513	32	513	21	513	35
	ILL. R-1	515	27	442	15	612	18	612	18	513	16	442	20	513	16	612	6	442	15	515	5
	ILL. R-2	442	26	442	26	442	26	442	26	442	26	442	26	442	26	442	12	442	26	513	54
	G-1	442	15	515	27	515	12	515	27	515	35	515	40	515	27	515	32	515	40	515	10
	G-2	513	21	513	10	513	10	513	10	513	17	513	18	513	17	513	17	513	8	513	54
	Y-1	515	27	515	8	515	27	612	18	515	27	612	28	515	27	515	8	515	27	515	54
	Y-2	513	42	515	12	515	35	513	42	513	42	612	18	612	18	612	12	612	18	514	9
Chip		501	61	499	27	501	31	499	33	492	36	612	37	492	37	513	61	513	40	WAVE	
PROJ. PR. No. 13	ILL. W	513	21	513	10	513	21	513	21	513	10	513	21	513	10	513	30	513	10	513	17
	ILL. R-1	612	18	514	5	612	18	612	18	514	5	612	18	442	5	513	17	442	15	514	2
	ILL. R-2	612	28	612	28	612	28	612	28	612	28	612	28	612	28	612	28	612	28	513	5
	G-1	515	54	442	5	515	40	515	40	442	5	515	40	515	40	513	42	442	15	514	5
	G-2	515	18	515	10	515	8	515	10	515	10	513	21	515	20	515	30	515	8	513	47
	Y-1	515	27	515	5	515	27	442	18	515	5	515	27	515	5	515	27	515	5	515	5
	Y-2	513	21	442	2	515	18	513	21	442	2	515	18	513	21	515	25	513	21	515	10
Chip		501	61	499	27	501	31	499	33	492	36	612	37	492	37	513	61	513	40	WAVE	
PROJ. PR. No. 14	ILL. W	513	21	513	21	513	21	513	21	513	21	513	21	513	21	513	21	513	21	513	17
	ILL. R-1	515	27	515	16	515	27	515	27	515	16	515	27	515	27	515	27	515	27	515	3
	ILL. R-2	612	28	612	28	612	28	612	28	612	28	612	28	612	28	612	28	612	28	513	20
	G-1	515	27	515	10	515	12	515	40	515	10	515	27	515	40	515	30	515	27	515	2
	G-2	515	18	515	10	515	8	515	17	515	10	513	21	515	17	515	17	515	10	515	54
	Y-1	515	35	515	18	515	35	515	35	515	18	515	35	515	18	515	35	515	35	515	20
	Y-2	515	40	515	35	515	27	515	27	515	35	515	40	612	28	515	8	612	28	515	10
Chip		501	61	499	27	501	31	499	33	492	36	612	37	492	37	513	61	513	40	WAVE	
PROJ. PR. No. 15	ILL. W	513	42	513	42	513	42	513	42	513	42	513	42	513	42	513	30	513	42	513	20
	ILL. R-1	515	27	612	18	612	18	612	18	442	12	515	27	612	18	612	9	612	18	442	6
	ILL. R-2	515	40	515	40	515	40	515	40	515	40	515	40	515	40	515	35	515	40	515	43
	G-1	515	40	515	35	515	27	515	35	515	5	515	40	515	37	515	30	515	40	515	10
	G-2	515	8	515	10	515	10	515	10	515	10	515	21	515	10	515	18	515	10	515	54
	Y-1	513	62	513	21	513	62	513	42	513	21	513	62	513	62	513	10	513	62	513	41
	Y-2	515	40	515	35	515	40	515	40	515	35	515	27	515	27	515	8	612	18	442	6
Chip		515	35	515	42	515	35	515	21	515	42	515	35	612	18	515	42	515	27	442	18

TABLE 58

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

1	2	3	4	5	6	7	8	9	back
λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe

PROJ. PR. NO. 16

W
ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

Chip

573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10
573/21	455/8	455/17	455/17	477/22	566/17	455/17	455/17	477/22	566/17
575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27
575/12	477/5	575/12	477/5	477/5	477/5	477/5	477/5	477/5	477/5
566/8	571/5	574/2	574/2	574/2	574/2	574/2	574/2	574/2	574/2
575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6
575/27	566/17	566/24	566/17	566/8	566/8	575/27	566/35	566/17	575/8
573/8	477/6	573/8	573/8	477/6	573/16	477/6	575/12	477/6	573/10

PROJ. PR. NO. 17

W
ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

Chip

572/11	572/11	572/11	572/11	572/11	572/11	572/11	572/11	572/11	572/11
566/8	566/17	566/17	566/17	455/17	455/17	455/17	455/17	455/17	455/17
575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27
575/12	477/5	575/12	477/5	477/5	477/5	477/5	477/5	477/5	477/5
566/8	571/5	574/2	574/2	574/2	574/2	574/2	574/2	574/2	574/2
575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6
575/27	566/17	566/24	566/17	566/8	566/8	575/27	566/35	566/17	575/8
573/8	477/6	573/8	573/8	477/6	573/16	477/6	575/12	477/6	573/10

PROJ. PR. NO. 18

W
ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

Chip

572/11	572/11	572/11	572/11	572/11	572/11	572/11	572/11	572/11	572/11
566/8	566/17	566/17	566/17	455/17	455/17	455/17	455/17	455/17	455/17
575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27
575/12	477/5	575/12	477/5	477/5	477/5	477/5	477/5	477/5	477/5
566/8	571/5	574/2	574/2	574/2	574/2	574/2	574/2	574/2	574/2
575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6
575/27	566/17	566/24	566/17	566/8	566/8	575/27	566/35	566/17	575/8
573/8	477/6	573/8	573/8	477/6	573/16	477/6	575/12	477/6	573/10

PROJ. PR. NO. 19

W
ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

Chip

573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10
573/21	455/8	455/17	455/17	477/22	566/17	455/17	455/17	477/22	566/17
575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27
575/12	477/5	575/12	477/5	477/5	477/5	477/5	477/5	477/5	477/5
566/8	571/5	574/2	574/2	574/2	574/2	574/2	574/2	574/2	574/2
575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6
575/27	566/17	566/24	566/17	566/8	566/8	575/27	566/35	566/17	575/8
573/8	477/6	573/8	573/8	477/6	573/16	477/6	575/12	477/6	573/10

PROJ. PR. NO. 20

W
ILL. W
R-1
R-2
G-1
G-2
Y-1
Y-2

Chip

573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10	573/10
573/21	455/8	455/17	455/17	477/22	566/17	455/17	455/17	477/22	566/17
575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27	575/27
575/12	477/5	575/12	477/5	477/5	477/5	477/5	477/5	477/5	477/5
566/8	571/5	574/2	574/2	574/2	574/2	574/2	574/2	574/2	574/2
575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6	575/6
575/27	566/17	566/24	566/17	566/8	566/8	575/27	566/35	566/17	575/8
573/8	477/6	573/8	573/8	477/6	573/16	477/6	575/12	477/6	573/10

TABLE 59

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 21	W	566	4	566	4	566	4	566	4	566	4
	R-1	478	11	455	8	453	17	455	17	455	17
	R-2	575	27	575	27	575	27	575	27	575	27
	G-1	566	4	573	21	566	4	435	4	566	4
	G-2	531	5	574	5	574	2	574	2	571	5
	Y-2	566	4	566	4	566	4	566	4	566	4
Chip		507	67	499	27	5610	31	455	33	492	36
PROJ. PR. NO. 22	W	572	17	572	17	572	17	572	17	572	17
	R-1	575	30	575	48	575	30	575	30	575	30
	R-2	575	40	575	27	575	40	575	27	575	40
	G-1	435	24	573	42	573	18	573	42	435	17
	G-2	574	2	575	18	566	8	573	17	566	8
	Y-2	575	18	575	18	575	18	575	18	575	18
Chip		507	67	499	27	5610	31	455	33	492	36
PROJ. PR. NO. 23	W	573	10	573	10	573	10	573	10	573	10
	R-1	573	42	573	35	573	42	573	35	573	42
	R-2	573	33	573	33	573	33	573	33	573	33
	G-1	435	24	573	42	573	42	573	42	573	42
	G-2	573	10	573	21	573	10	573	10	573	10
	Y-2	573	42	573	35	573	42	573	35	573	42
Chip		507	67	499	27	5610	31	455	33	492	36
PROJ. PR. NO. 24	W	573	42	573	42	573	42	573	42	573	42
	R-1	573	35	573	27	573	35	573	27	573	35
	R-2	573	40	573	40	573	40	573	40	573	40
	G-1	573	35	573	35	573	35	573	35	573	35
	G-2	573	10	573	10	573	10	573	10	573	10
	Y-2	573	42	573	35	573	42	573	35	573	42
Chip		507	67	499	27	5610	31	455	33	492	36
PROJ. PR. NO. 25	W	573	11	573	11	573	11	573	11	573	11
	R-1	573	48	573	42	573	35	573	27	573	35
	R-2	573	40	573	40	573	40	573	40	573	40
	G-1	573	18	573	4	573	18	573	12	573	12
	G-2	573	5	573	5	573	2	573	2	573	2
	Y-2	573	48	573	42	573	35	573	27	573	35
Chip		507	67	499	27	5610	31	455	33	492	36

TABLE 60

		Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10																	
		1	2	3	4	5	6	7	8	9	back								
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe		
PROJ. PR. NO. 26	RESPONSES	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10		
	AMB. ILL. R-1	583 21	488 22	488 8	488 8	488 24	488 8	488 8	488 27	488 17	488 17	488 17	488 17	488 17	488 17	488 17	488 17		
	AMB. ILL. R-2	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10	583 10		
	AMB. ILL. G-1	583 27	488 4	586 4	488 4	488 4	488 5	488 5	488 27	488 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4		
	AMB. ILL. G-2	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8	583 8		
	AMB. ILL. Y-1	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12	583 12		
	AMB. ILL. Y-2	583 42	586 8	586 8	586 8	586 8	586 8	586 8	586 8	586 8	586 8	586 8	586 8	586 8	586 8	586 8	586 8		
Chip		587 67	488 27	586 31	488 33	488 36	612 37	488 37	583 61	583 61	583 61	583 61	583 61	583 61	583 61	583 61	583 61	WHITE	
PROJ. PR. NO. 27	RESPONSES	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11		
	AMB. ILL. R-1	583 18	586 17	586 8	586 8	586 24	586 17	586 16	586 24	586 24	586 24	586 24	586 24	586 24	586 24	586 24	586 24		
	AMB. ILL. R-2	583 53	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35		
	AMB. ILL. G-1	583 27	586 8	586 4	586 8	488 5	583 27	586 4	583 27	586 4	583 27	586 4	583 27	586 4	583 27	586 4	583 27		
	AMB. ILL. G-2	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5		
	AMB. ILL. Y-1	583 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4		
	AMB. ILL. Y-2	583 21	583 5	583 21	583 35	583 5	583 11	583 21	583 35	583 21	583 35	583 21	583 35	583 21	583 35	583 21	583 35		
Chip		587 67	488 27	586 31	488 33	488 36	612 37	488 37	583 61	583 61	583 61	583 61	583 61	583 61	583 61	583 61	583 61	WHITE	
PROJ. PR. NO. 28	RESPONSES	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11		
	AMB. ILL. R-1	583 18	586 17	586 8	586 8	586 24	586 17	586 16	586 24	586 24	586 24	586 24	586 24	586 24	586 24	586 24	586 24		
	AMB. ILL. R-2	583 53	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35		
	AMB. ILL. G-1	583 27	586 8	586 4	586 8	488 5	583 27	586 4	583 27	586 4	583 27	586 4	583 27	586 4	583 27	586 4	583 27		
	AMB. ILL. G-2	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5		
	AMB. ILL. Y-1	583 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4		
	AMB. ILL. Y-2	583 21	583 5	583 21	583 35	583 5	583 11	583 21	583 35	583 21	583 35	583 21	583 35	583 21	583 35	583 21	583 35		
Chip		587 67	488 27	586 31	488 33	488 36	612 37	488 37	583 61	583 61	583 61	583 61	583 61	583 61	583 61	583 61	583 61	WHITE	
PROJ. PR. NO. 29	RESPONSES	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11	583 11		
	AMB. ILL. R-1	583 18	586 17	586 8	586 8	586 24	586 17	586 16	586 24	586 24	586 24	586 24	586 24	586 24	586 24	586 24	586 24		
	AMB. ILL. R-2	583 53	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35	583 35		
	AMB. ILL. G-1	583 27	586 8	586 4	586 8	488 5	583 27	586 4	583 27	586 4	583 27	586 4	583 27	586 4	583 27	586 4	583 27		
	AMB. ILL. G-2	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5	583 5		
	AMB. ILL. Y-1	583 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4	586 4		
	AMB. ILL. Y-2	583 21	583 5	583 21	583 35	583 5	583 11	583 21	583 35	583 21	583 35	583 21	583 35	583 21	583 35	583 21	583 35		
Chip		587 67	488 27	586 31	488 33	488 36	612 37	488 37	583 61	583 61	583 61	583 61	583 61	583 61	583 61	583 61	583 61	WHITE	

TABLE 61

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair //

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	ILL. W	575 30	573 42	575 30	575 30	573 42	575 30	573 42	481 36	573 42	481 36
	R-1	575 48	575 54	575 30	575 40	575 54	575 48	575 40	573 32	575 40	481 36
	R-2	573 62	575 53	573 42	573 62	575 53	573 62	573 42	573 17	573 62	481 36
	G-1	573 42	573 16	573 42	573 42	573 16	573 62	573 16	575 30	573 16	481 36
	G-2	566 17	573 21	566 17	566 8	566 8	566 35	475 5	573 11	573 18	481 36
	Y-1	575 48	575 53	575 48	575 30	575 53	575 48	575 35	575 30	575 53	481 36
	Y-2	575 61	575 54	575 61	575 40	575 54	575 61	575 54	573 32	575 54	481 36
Chip		575 48	492 30	573 62	492 22	492 30	575 48	492 30	573 32	492 22	481 36
PROJ. PR. No. 2	ILL. W	575 48	573 53	575 48	575 48	573 53	575 48	573 53	492 13	573 53	492 25
	R-1	575 48	575 54	575 48	575 40	575 54	573 32	575 40	573 32	575 40	492 25
	R-2	573 53	575 54	573 53	573 53	575 40	573 54	492 19	573 47	492 19	492 36
	G-1	573 35	566 17	573 35	573 18	566 17	573 42	566 17	573 32	566 17	492 36
	G-2	566 17	566 17	566 17	566 17	566 8	573 32	566 8	573 11	492 5	492 25
	Y-1	575 48	575 54	575 48	575 40	575 54	575 48	575 40	573 32	575 40	492 36
	Y-2	575 48	575 54	575 48	575 40	575 54	575 48	575 54	573 32	575 40	492 36
Chip		573 62	492 30	573 62	492 22	492 30	575 48	492 30	573 17	492 30	492 36
PROJ. PR. No. 3	ILL. W	575 18	573 42	575 18	573 31	573 42	573 21	573 31	573 17	573 42	566 17
	R-1	575 30	566 21	575 30	575 30	566 24	575 30	566 24	573 17	566 24	566 8
	R-2	573 53	492 30	573 53	573 40	492 30	573 53	492 22	575 30	492 22	492 13
	G-1	573 18	566 24	573 35	573 35	566 17	573 42	492 24	575 30	492 24	492 13
	G-2	566 17	492 34	566 35	566 17	492 13	566 25	492 13	573 17	492 9	492 19
	Y-1	573 31	573 35	573 40	573 40	573 35	573 31	573 35	573 47	573 42	566 32
	Y-2	575 61	573 32	575 61	573 24	573 32	575 61	573 32	573 32	573 24	566 17
Chip		573 30	566 21	575 30	566 24	566 31	575 30	566 31	573 32	566 31	492 17
PROJ. PR. No. 4	ILL. W	573 17	573 11	573 17	573 11	573 11	573 17	573 17	573 32	573 11	573 24
	R-1	575 40	492 24	575 40	492 24	492 31	573 27	492 17	575 27	492 17	573 32
	R-2	573 53	573 18	573 53	573 53	573 18	573 53	573 35	492 19	573 35	573 24
	G-1	573 40	492 4	575 27	575 21	566 4	575 40	566 4	492 30	566 4	573 32
	G-2	573 32	492 6	566 17	566 17	492 12	573 32	492 5	573 42	573 2	612 37
	Y-1	575 30	573 10	575 30	575 30	573 10	573 18	573 10	492 22	573 10	492 30
	Y-2	575 61	566 24	575 48	566 24	566 24	575 61	566 31	612 50	566 24	573 32
Chip		573 35	492 24	573 42	492 24	492 31	573 62	492 31	575 54	492 31	566 32
PROJ. PR. No. 5	ILL. W	573 32	573 17	573 17	573 17	573 32	573 17	573 17	573 16	573 17	566 10
	R-1	573 47	492 17	573 32	573 32	492 17	573 32	492 17	492 4	492 17	492 30
	R-2	573 53	573 35	573 53	573 53	573 35	573 53	573 35	573 27	573 35	566 32
	G-1	575 27	492 4	575 12	575 12	492 4	575 6	492 4	575 27	492 4	566 32
	G-2	566 17	573 15	573 17	573 10	492 5	573 32	573 5	573 11	573 10	492 19
	Y-1	573 60	492 15	573 47	573 17	492 15	573 32	573 32	573 24	573 17	566 32
	Y-2	575 61	575 30	575 61	575 30	575 30	575 61	575 30	612 46	575 61	566 32
Chip		575 48	492 24	575 61	492 17	492 31	575 61	492 24	575 54	492 24	566 32

TABLE 6.2

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair //

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 6	AMB.	572 11	572 11	572 17	572 17	572 11	572 17	572 11	572 11	572 11	566 8
	ILL.	575 48	575 30	575 30	575 30	575 24	575 48	575 30	575 30	575 30	566 17
	R-1	575 53	575 68	575 53	575 53	575 68	575 53	575 68	575 30	575 68	492 27
	R-2	575 42	575 8	575 42	575 42	575 17	575 62	575 24	575 30	575 8	492 24
	G-1	575 17	575 2	575 35	575 8	575 6	575 17	575 3	575 17	575 10	492 15
	G-2	575 17	575 11	575 17	575 17	575 11	575 17	575 17	575 24	575 17	566 24
RESPONSES	Y-1	575 61	575 24	575 61	575 48	575 24	575 61	575 24	575 42	575 32	566 8
	Y-2	575 30	575 24	575 30	575 30	575 30	575 48	575 24	575 17	575 17	492 17
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE
PROJ. PR. No. 7	AMB.	573 62	573 62	573 62	573 62	573 62	573 62	573 62	573 62	573 62	574 15
	ILL.	575 35	575 27	575 27	575 27	575 27	575 27	575 27	575 27	575 27	499 20
	R-1	575 53	575 68	575 53	575 53	575 68	575 53	575 68	575 54	575 68	551 43
	R-2	575 42	575 21	575 21	575 21	575 10	575 42	575 27	575 32	575 27	574 20
	G-1	575 21	575 10	575 8	575 8	575 8	575 10	575 10	575 11	575 18	566 54
	G-2	575 53	575 68	575 53	575 53	575 53	575 53	575 53	575 31	575 53	551 43
RESPONSES	Y-1	575 62	575 27	575 53	575 40	575 27	575 35	575 40	575 8	575 40	574 15
	Y-2	575 27	575 35	575 27	575 27	575 27	575 35	575 18	575 17	575 18	574 15
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE
PROJ. PR. No. 8	AMB.	573 42	573 42	573 42	573 42	573 42	573 42	573 42	573 42	573 42	574 17
	ILL.	575 35	575 42	575 35	575 35	575 42	575 35	575 42	575 35	575 35	551 10
	R-1	575 53	575 68	575 53	575 53	575 68	575 53	575 68	575 54	575 68	574 43
	R-2	575 12	575 6	575 40	575 21	575 6	575 62	575 27	575 35	575 27	574 20
	G-1	575 18	575 5	575 21	575 9	499 6	575 12	499 3	575 32	575 2	575 48
	G-2	575 35	575 18	575 35	575 35	575 18	575 35	575 18	575 17	575 18	574 32
RESPONSES	Y-1	575 35	575 27	575 42	575 27	612 18	575 35	612 18	575 5	575 27	574 9
	Y-2	575 35	575 18	575 27	575 27	612 18	575 35	27612 18	575 17	612 18	574 20
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE
PROJ. PR. No. 9	AMB.	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 6	575 27
	ILL.	612 18	499 25	612 18	499 13	499 25	575 27	499 25	612 4	499 25	575 12
	R-1	575 35	575 18	575 35	575 18	575 18	575 35	575 18	575 17	575 18	574 5
	R-2	575 40	499 25	575 40	499 25	499 25	575 40	499 25	575 27	499 25	575 6
	G-1	575 10	574 9	575 10	574 5	574 5	575 18	574 5	575 35	551 20	575 68
	G-2	575 27	575 6	575 27	575 12	575 6	575 27	575 12	575 27	575 12	575 40
RESPONSES	Y-1	575 27	499 25	575 42	499 25	499 37	575 24	499 37	575 37	499 25	575 27
	Y-2	612 16	499 25	499 13	499 25	499 37	575 24	499 25	575 35	499 25	612 18
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE
PROJ. PR. No. 10	AMB.	573 10	574 2	574 3	574 2	573 10	574 2	574 2	574 2	574 2	566 4
	ILL.	575 13	499 13	499 13	499 13	499 13	499 13	499 13	499 13	499 13	499 12
	R-1	575 53	575 35	575 53	575 35	575 18	575 53	575 18	575 18	575 18	575 8
	R-2	575 27	499 5	575 27	499 5	499 5	575 27	499 5	575 40	575 17	499 4
	G-1	573 10	574 9	575 10	574 4	574 4	575 18	575 10	575 18	574 20	575 18
	G-2	575 35	575 8	575 35	575 5	575 8	575 18	575 5	575 8	575 5	575 8
RESPONSES	Y-1	573 42	499 12	575 35	499 12	499 24	575 27	499 12	575 12	499 12	499 6
	Y-2	575 12	499 13	612 9	499 13	499 25	575 27	499 25	575 35	499 25	499 7

TABLE 63

Wavelength (Å) and Excitation Purity (Pe): Narrowband Slide Pair //

		1		2		3		4		5		6		7		8		9		BACK	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. //	AMB. ILL. W	583 45	583 21	583 46	583 42	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	583 42	
	AMB. ILL. R-1	587 25	587 12	587 18	587 18	587 12	587 25	587 18	587 12	587 25	587 18	587 12	587 25	587 18	587 12	587 25	587 18	587 12	587 25	587 18	
	AMB. ILL. R-2	587 53	587 61	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	
	AMB. G-1	587 27	587 12	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	
	AMB. G-2	583 21	587 10	587 8	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	587 10	
	Y-1	587 42	587 10	583 42	583 21	583 10	583 42	583 21	583 10	583 42	583 21	583 10	583 42	583 21	583 10	583 42	583 21	583 10	583 42	583 21	
Y-2	587 35	583 42	587 27	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	
Chip		587 42	587 18	587 27	587 35	587 18	587 27	587 35	587 18	587 27	587 35	587 18	587 27	587 35	587 18	587 27	587 35	587 18	587 27	587 35	
PROJ. PR. No. /2	AMB. ILL. W	583 42	583 42	583 41	583 42	583 42	583 42	583 62	583 42	583 30	583 42	586 35	583 42	586 35	583 42	586 35	583 42	586 35	583 42	586 35	
	AMB. ILL. R-1	583 42	583 21	587 35	587 35	587 18	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	
	AMB. ILL. R-2	587 53	587 61	587 53	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	
	AMB. G-1	587 54	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	
	AMB. G-2	587 18	587 5	583 21	583 10	587 10	587 12	587 5	587 30	587 2	587 48	587 2	587 48	587 2	587 48	587 2	587 48	587 2	587 48	587 2	
	Y-1	587 23	587 8	587 53	587 35	587 8	587 53	587 35	587 17	587 35	587 47	587 35	587 47	587 35	587 47	587 35	587 47	587 35	587 47	587 35	
Y-2	587 62	587 42	587 53	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	
Chip		587 35	583 42	587 27	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	
PROJ. PR. No. /3	AMB. ILL. W	583 16	583 17	583 10	583 10	583 10	583 10	583 17	583 10	583 17	583 10	583 17	583 10	583 17	583 10	583 17	583 10	583 17	583 10	583 17	
	AMB. ILL. R-1	587 27	587 12	587 18	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	
	AMB. ILL. R-2	587 53	587 61	587 53	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	
	AMB. G-1	587 54	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	
	AMB. G-2	587 18	587 5	583 21	583 10	587 10	587 12	587 5	587 30	587 2	587 48	587 2	587 48	587 2	587 48	587 2	587 48	587 2	587 48	587 2	
	Y-1	587 23	587 8	587 53	587 35	587 8	587 53	587 35	587 17	587 35	587 47	587 35	587 47	587 35	587 47	587 35	587 47	587 35	587 47	587 35	
Y-2	587 62	587 42	587 53	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	
Chip		587 61	488 27	587 10	587 35	587 18	587 27	612 18	587 6	612 18	488 12	587 6	612 18	488 12	587 6	612 18	488 12	587 6	612 18	488 12	
PROJ. PR. No. /4	AMB. ILL. W	583 12	583 17	583 42	583 17	583 17	583 42	583 21	583 30	583 17	583 42	586 35	583 17	586 35	583 17	586 35	583 17	586 35	583 17	586 35	
	AMB. ILL. R-1	587 27	587 12	587 18	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	
	AMB. ILL. R-2	587 53	587 61	587 53	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	
	AMB. G-1	587 54	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	
	AMB. G-2	587 18	587 5	583 21	583 10	587 10	587 12	587 5	587 30	587 2	587 48	587 2	587 48	587 2	587 48	587 2	587 48	587 2	587 48	587 2	
	Y-1	587 23	587 8	587 53	587 35	587 8	587 53	587 35	587 17	587 35	587 47	587 35	587 47	587 35	587 47	587 35	587 47	587 35	587 47	587 35	
Y-2	587 62	587 42	587 53	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	
Chip		587 61	488 27	587 10	587 35	587 18	587 27	612 18	587 6	612 18	488 12	587 6	612 18	488 12	587 6	612 18	488 12	587 6	612 18	488 12	
PROJ. PR. No. /5	AMB. ILL. W	583 12	583 17	583 42	583 17	583 17	583 42	583 21	583 30	583 17	583 42	586 35	583 17	586 35	583 17	586 35	583 17	586 35	583 17	586 35	
	AMB. ILL. R-1	587 27	587 12	587 18	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	587 12	587 27	587 18	
	AMB. ILL. R-2	587 53	587 61	587 53	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	587 53	587 61	
	AMB. G-1	587 54	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	587 27	
	AMB. G-2	587 18	587 5	583 21	583 10	587 10	587 12	587 5	587 30	587 2	587 48	587 2	587 48	587 2	587 48	587 2	587 48	587 2	587 48	587 2	
	Y-1	587 23	587 8	587 53	587 35	587 8	587 53	587 35	587 17	587 35	587 47	587 35	587 47	587 35	587 47	587 35	587 47	587 35	587 47	587 35	
Y-2	587 62	587 42	587 53	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	587 42	
Chip		587 61	488 27	587 10	587 35	587 18	587 27	612 18	587 6	612 18	488 12	587 6	612 18	488 12	587 6	612 18	488 12	587 6	612 18	488 12	

TABLE 64

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair //

	1		2		3		4		5		6		7		8		9		back	
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16																				
AMB. ILL. W	573	1	573	1	573	10	573	5	573	10	573	5	573	42	573	5	573	42		
R-1	612	9	499	6	566	17	499	6	499	13	566	17		612	18	499	3	573	35	
R-2	577	68	577	35	577	53	577	53	577	18	577	53	577	18	577	30	577	18	573	32
G-1	577	18	499	12	577	18	499	6	499	24	577	35	499	7	573	62	499	7	573	42
G-2	577	8	577	10	577	6	577	10	577	10	577	21	577	1	577	35	577	5	577	68
Y-1	577	18	577	8	577	18	577	18	577	8	577	18	577	8	577	53	577	8	577	68
Y-2	573	42	499	13	566	17	566	17	499	24	566	24	499	25	566	24	499	25	577	8
Chip	577	67	499	27	566	31	499	33	499	36	612	37	499	37	573	61	573	40	WHITE	
PROJ. PR. No. 17																				
AMB. ILL. W	573	21	573	5	573	21	573	2	573	7	573	10	573	5	573	42	573	5	573	42
R-1	573	42	499	6	499	4	499	4	499	6	566	17	499	4	566	31	499	4	573	12
R-2	577	53	577	35	577	53	577	35	577	35	577	53	577	35	577	30	577	35	573	32
G-1	577	8	499	6	577	8	499	6	499	12	577	35	573	10	573	42	499	7	573	31
G-2	577	5	577	5	577	9	577	10	499	9	573	21	573	5	573	42	577	10	573	62
Y-1	573	62	573	10	573	42	573	42	573	10	573	42	573	10	573	62	573	10	573	62
Y-2	573	21	499	18	566	24	566	24	499	25	566	24	499	13	577	27	499	13	573	10
Chip	566	17	574	5	566	24	574	2	574	9	566	24	574	2	566	8	574	2	577	18
Chip	577	67	499	27	566	31	499	33	499	36	612	37	499	37	573	61	573	40	WHITE	
PROJ. PR. No. 18																				
AMB. ILL. W	573	11	573	11	573	11	573	11	573	11	573	11	573	11	573	11	573	11	573	17
R-1	612	9	577	18	566	8	499	8	566	17	566	17	566	24	566	17	566	24	499	7
R-2	577	53	577	68	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	2
G-1	573	27	573	12	573	12	573	27	573	6	573	12	573	27	573	12	573	27	573	10
G-2	574	2	573	5	573	10	573	5	499	2	573	10	574	2	573	18	573	5	573	42
Y-1	573	11	573	11	573	11	573	11	573	11	573	11	573	11	573	11	573	11	573	32
Y-2	573	21	573	42	566	16	566	16	566	24	573	42	573	62	566	17	573	42	499	7
Chip	573	21	573	10	566	8	566	8	573	21	566	8	566	24	566	8	573	24	566	8
Chip	577	67	499	27	566	31	499	33	499	36	612	37	499	37	573	61	573	40	WHITE	
PROJ. PR. No. 19																				
AMB. ILL. W	573	6	573	6	573	6	573	6	573	6	573	6	573	6	573	6	573	6	573	40
R-1	499	4	499	17	499	24	499	24	499	24	499	17	499	4	499	31	499	4	612	37
R-2	573	27	573	27	573	27	573	27	573	27	573	27	573	27	573	27	573	27	573	54
G-1	566	8	566	17	566	17	566	17	566	17			566	8	573	20	566	5	573	45
G-2	574	5	499	6	499	9	499	3	573	10	574	2	573	10	573	12	573	10	573	54
Y-1	612	18	612	9	612	9	612	9	612	9	612	9	612	9	612	28	612	9	612	37
Y-2			566	8	499	4	499	4	499	4			499	4	566	24	499	4	573	54
Chip	499	4	566	17	573	5	499	4	612	9	499	4	566	4	566	17	566	4	573	54
Chip	577	67	499	27	566	31	499	33	499	36	612	37	499	37	573	61	573	40	WHITE	
PROJ. PR. No. 20																				
AMB. ILL. W	573	5	573	10	573	5	573	5	573	10	573	5	573	10	573	10	573	10	573	8
R-1	499	24	566	17	566	24	566	24	566	16	499	25	566	8	499	25	566	17	573	6
R-2	577	53	577	68	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	10
G-1	499	6	577	18	499	6	499	6	499	6	499	6	499	6	499	6	499	6	499	5
G-2	573	10	573	6	573	2	573	2	573	2	573	2	573	2	573	2	573	2	573	27
Y-1	573	5	573	6	573	5	573	5	573	5	573	5	573	5	573	5	573	5	573	42
Y-2	573	17	566	16	566	17	566	17	566	16	566	16	566	16	566	16	566	16	566	27
Chip	499	13	566	24	499	13	566	17	566	24	499	25	566	24	499	25	566	24	499	4

TABLE 65

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair //

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	AMB. ILL. N W	572	11	512	11	512	11	512	11	512	11	512	11	512	11	512	11	512	17		
	AMB. ILL. R-1	435	8	532	16	435	17	435	17	532	16	435	17	532	16	435	17	532	24	435	6
	AMB. ILL. R-2	572	35	572	53	572	53	572	35	572	35	572	53	572	53	572	35	572	53	572	30
	AMB. ILL. G-1	435	4	612	18	435	4	435	4	612	9	435	6	532	4	532	17	572	12	572	2
	AMB. ILL. G-2	572	2	432	3	432	9	432	3	432	13	432	7	532	5	572	18	432	6	572	27
	AMB. ILL. Y-1	572	10	572	10	572	10	572	10	572	10	572	10	572	10	572	10	572	10	572	11
PROJ. PR. No. 22	AMB. ILL. N W	572	8	532	16	532	5	532	16	612	18	572	8	532	16	432	13	532	16	572	6
	AMB. ILL. R-1	435	12	532	17	532	16	532	16	532	24	435	12	532	16	435	7	532	24	572	6
	AMB. ILL. R-2	572	61	432	27	561	31	432	33	432	36	612	37	432	37	572	61	532	40	572	30
	AMB. ILL. G-1	572	18	572	30	572	17	572	18	572	30	572	30	572	30	572	30	572	30	572	24
	AMB. ILL. G-2	435	24	572	48	435	29	572	48	572	61	435	24	572	61	435	24	572	48	435	31
	AMB. ILL. Y-1	572	53	572	62	572	53	572	53	572	62	572	53	572	62	572	53	572	62	572	24
PROJ. PR. No. 23	AMB. ILL. N W	435	17	572	42	435	24	572	42	572	62	435	24	572	42	435	31	572	42	572	31
	AMB. ILL. R-1	435	3	572	35	572	2	572	5	572	35	435	6	572	35	435	17	572	35	572	24
	AMB. ILL. R-2	572	30	572	47	572	32	572	32	572	47	572	17	572	47	572	32	572	47	572	31
	AMB. ILL. G-1	572	48	572	61	572	48	572	61	572	61	572	48	572	61	572	48	572	61	572	31
	AMB. ILL. G-2	572	30	572	61	572	48	572	61	572	61	572	30	572	61	572	30	572	61	572	31
	AMB. ILL. Y-1	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	31
PROJ. PR. No. 24	AMB. ILL. N W	572	42	572	42	572	42	572	42	572	42	572	42	572	42	572	42	572	42	572	31
	AMB. ILL. R-1	435	17	572	62	435	30	572	62	572	62	435	17	572	62	435	30	572	62	435	24
	AMB. ILL. R-2	572	53	572	62	572	53	572	53	572	62	572	53	572	62	572	53	572	62	572	24
	AMB. ILL. G-1	572	5	572	61	572	5	572	61	572	61	572	5	572	61	572	5	572	61	572	24
	AMB. ILL. G-2	572	5	572	18	572	5	572	18	572	18	572	5	572	18	572	5	572	18	572	24
	AMB. ILL. Y-1	572	35	572	53	572	35	572	53	572	53	572	35	572	53	572	35	572	53	572	24
PROJ. PR. No. 25	AMB. ILL. N W	572	8	572	36	572	8	572	36	572	36	572	8	572	36	572	8	572	36	572	24
	AMB. ILL. R-1	572	12	572	35	572	12	572	35	572	35	572	12	572	35	572	12	572	35	572	24
	AMB. ILL. R-2	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	24
	AMB. ILL. G-1	572	5	572	35	572	5	572	35	572	35	572	5	572	35	572	5	572	35	572	24
	AMB. ILL. G-2	572	27	572	40	572	27	572	40	572	40	572	27	572	40	572	27	572	40	572	24
	AMB. ILL. Y-1	572	35	572	27	572	35	572	27	572	27	572	35	572	27	572	35	572	27	572	24
PROJ. PR. No. 26	AMB. ILL. N W	572	8	572	36	572	8	572	36	572	36	572	8	572	36	572	8	572	36	572	24
	AMB. ILL. R-1	572	12	572	35	572	12	572	35	572	35	572	12	572	35	572	12	572	35	572	24
	AMB. ILL. R-2	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	61	572	24
	AMB. ILL. G-1	572	5	572	35	572	5	572	35	572	35	572	5	572	35	572	5	572	35	572	24
	AMB. ILL. G-2	572	27	572	40	572	27	572	40	572	40	572	27	572	40	572	27	572	40	572	24
	AMB. ILL. Y-1	572	35	572	27	572	35	572	27	572	27	572	35	572	27	572	35	572	27	572	24

TABLE 66

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair //

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 26	AMB. ILL. W	575	6	575	6	575	6	575	6	575	6
	R-1	575	42	486	25	577	18	481	24	486	25
	R-2	577	53	577	18	577	53	577	18	577	53
	G-1	575	27	486	13	575	27	486	13	575	27
	G-2	577	18	486	13	577	18	486	13	577	18
	Y-1	575	35	577	18	577	35	577	18	577	35
	Y-2	575	21	455	24	575	21	455	24	575	21
Chip		575	24	486	7	575	24	486	7	575	24
PROJ. PR. No. 27	AMB. ILL. W	575	6	575	6	575	6	575	6	575	6
	R-1	575	12	481	12	481	12	481	12	481	12
	R-2	575	35	577	18	577	35	577	18	577	35
	G-1	575	27	486	13	575	27	486	13	575	27
	G-2	577	18	486	13	577	18	486	13	577	18
	Y-1	575	35	577	18	577	35	577	18	577	35
	Y-2	575	21	455	24	575	21	455	24	575	21
Chip		575	24	486	7	575	24	486	7	575	24
PROJ. PR. No. 28	AMB. ILL. W	575	6	575	6	575	6	575	6	575	6
	R-1	575	12	481	12	481	12	481	12	481	12
	R-2	575	35	577	18	577	35	577	18	577	35
	G-1	575	27	486	13	575	27	486	13	575	27
	G-2	577	18	486	13	577	18	486	13	577	18
	Y-1	575	35	577	18	577	35	577	18	577	35
	Y-2	575	21	455	24	575	21	455	24	575	21
Chip		575	24	486	7	575	24	486	7	575	24
PROJ. PR. No. 29	AMB. ILL. W	575	6	575	6	575	6	575	6	575	6
	R-1	575	12	481	12	481	12	481	12	481	12
	R-2	575	35	577	18	577	35	577	18	577	35
	G-1	575	27	486	13	575	27	486	13	575	27
	G-2	577	18	486	13	577	18	486	13	577	18
	Y-1	575	35	577	18	577	35	577	18	577	35
	Y-2	575	21	455	24	575	21	455	24	575	21
Chip		575	24	486	7	575	24	486	7	575	24
PROJ. PR. No. 30	AMB. ILL. W	575	6	575	6	575	6	575	6	575	6
	R-1	575	12	481	12	481	12	481	12	481	12
	R-2	575	35	577	18	577	35	577	18	577	35
	G-1	575	27	486	13	575	27	486	13	575	27
	G-2	577	18	486	13	577	18	486	13	577	18
	Y-1	575	35	577	18	577	35	577	18	577	35
	Y-2	575	21	455	24	575	21	455	24	575	21
Chip		575	24	486	7	575	24	486	7	575	24
PROJ. PR. No. 31	AMB. ILL. W	575	6	575	6	575	6	575	6	575	6
	R-1	575	12	481	12	481	12	481	12	481	12
	R-2	575	35	577	18	577	35	577	18	577	35
	G-1	575	27	486	13	575	27	486	13	575	27
	G-2	577	18	486	13	577	18	486	13	577	18
	Y-1	575	35	577	18	577	35	577	18	577	35
	Y-2	575	21	455	24	575	21	455	24	575	21
Chip		575	24	486	7	575	24	486	7	575	24

TABLE 67

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair /2

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	W	575	30	575	30	575	30	575	30	575	30
	ILL. W	575	30	575	30	575	30	575	30	575	30
	R-1	575	30	575	30	575	30	575	30	575	30
	R-2	575	30	575	30	575	30	575	30	575	30
	G-1	575	30	575	30	575	30	575	30	575	30
	G-2	575	30	575	30	575	30	575	30	575	30
	Y-1	575	30	575	30	575	30	575	30	575	30
PROJ. PR. No. 2	W	575	30	575	30	575	30	575	30	575	30
	ILL. W	575	30	575	30	575	30	575	30	575	30
	R-1	575	30	575	30	575	30	575	30	575	30
	R-2	575	30	575	30	575	30	575	30	575	30
	G-1	575	30	575	30	575	30	575	30	575	30
	G-2	575	30	575	30	575	30	575	30	575	30
	Y-1	575	30	575	30	575	30	575	30	575	30
PROJ. PR. No. 3	W	575	30	575	30	575	30	575	30	575	30
	ILL. W	575	30	575	30	575	30	575	30	575	30
	R-1	575	30	575	30	575	30	575	30	575	30
	R-2	575	30	575	30	575	30	575	30	575	30
	G-1	575	30	575	30	575	30	575	30	575	30
	G-2	575	30	575	30	575	30	575	30	575	30
	Y-1	575	30	575	30	575	30	575	30	575	30
PROJ. PR. No. 4	W	575	30	575	30	575	30	575	30	575	30
	ILL. W	575	30	575	30	575	30	575	30	575	30
	R-1	575	30	575	30	575	30	575	30	575	30
	R-2	575	30	575	30	575	30	575	30	575	30
	G-1	575	30	575	30	575	30	575	30	575	30
	G-2	575	30	575	30	575	30	575	30	575	30
	Y-1	575	30	575	30	575	30	575	30	575	30
PROJ. PR. No. 5	W	575	30	575	30	575	30	575	30	575	30
	ILL. W	575	30	575	30	575	30	575	30	575	30
	R-1	575	30	575	30	575	30	575	30	575	30
	R-2	575	30	575	30	575	30	575	30	575	30
	G-1	575	30	575	30	575	30	575	30	575	30
	G-2	575	30	575	30	575	30	575	30	575	30
	Y-1	575	30	575	30	575	30	575	30	575	30

TABLE 68

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

[illegible]

TABLE 69

Wavelength (λ) and Excitation Purity (Pe); Narrowband Slide Pair /2

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 11	AMB. ILL. N W	571	21	571	5	573	21	573	21	571	5	573	21	571	5	572	17	573	10	571	10
	R-1	571	35	572	16	575	27	575	27	572	16	575	27	572	16	499	3	575	27	478	6
	R-2	571	53	571	53	571	53	571	53	571	53	571	53	571	53	571	42	571	53	571	15
	G-1	571	53	612	18	571	35	576	8	571	5	575	27	571	53	576	8	575	27	478	12
	G-2	571	8	571	10	571	8	571	10	571	10	571	12	571	10	571	10	571	5	571	20
	Y-1	571	35	571	8	571	35	571	35	571	8	571	85	571	18	571	5	571	18	571	9
Y-2	571	35	571	27	571	27	571	27	571	27	571	40	612	18	612	9	571	18	478	7	
Chip		571	35	576	42	575	27	575	27	573	42	575	27	571	35	575	12	571	35	478	23
PROJ. PR. NO. 12	AMB. ILL. N W	573	42	573	21	573	42	573	42	573	21	573	42	573	21	575	12	573	21	576	35
	R-1	575	27	612	18	575	40	575	27	612	18	495	12	492	12	571	5	495	12	574	9
	R-2	575	40	575	40	575	40	575	40	575	40	575	40	575	40	576	35	575	40	571	43
	G-1	575	27	571	35	571	18	571	18	571	18	575	27	576	35	575	27	574	5		
	G-2	575	12	571	20	571	35	573	42	571	9	573	42	571	5	575	30	571	5	572	47
	Y-1	575	27	571	18	571	53	571	35	571	18	571	53	571	35	576	17	571	35	576	54
Y-2	575	27	571	18	571	53	571	35	571	27	612	18	612	18	576	8	612	18	574	9	
Chip		575	27	571	42	575	27	575	27	571	35	575	27	571	35	576	32	571	35	574	9
PROJ. PR. NO. 13	AMB. ILL. N W	573	42	573	21	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	42
	R-1	575	27	612	18	575	40	575	27	612	18	495	12	492	12	571	5	495	12	574	9
	R-2	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	571	43
	G-1	575	27	571	35	571	18	571	18	571	18	575	27	576	35	575	27	574	5		
	G-2	575	12	571	20	571	35	573	42	571	9	573	42	571	5	575	30	571	5	572	47
	Y-1	575	27	571	18	571	53	571	35	571	18	571	53	571	35	576	17	571	35	576	54
Y-2	575	27	571	18	571	53	571	35	571	27	612	18	612	18	576	8	612	18	574	9	
Chip		575	27	571	42	575	27	575	27	571	35	575	27	571	35	576	32	571	35	574	9
PROJ. PR. NO. 14	AMB. ILL. N W	573	42	573	21	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	42
	R-1	575	27	612	18	575	40	575	27	612	18	495	12	492	12	571	5	495	12	574	9
	R-2	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	571	43
	G-1	575	27	571	35	571	18	571	18	571	18	575	27	576	35	575	27	574	5		
	G-2	575	12	571	20	571	35	573	42	571	9	573	42	571	5	575	30	571	5	572	47
	Y-1	575	27	571	18	571	53	571	35	571	18	571	53	571	35	576	17	571	35	576	54
Y-2	575	27	571	18	571	53	571	35	571	27	612	18	612	18	576	8	612	18	574	9	
Chip		575	27	571	42	575	27	575	27	571	35	575	27	571	35	576	32	571	35	574	9
PROJ. PR. NO. 15	AMB. ILL. N W	573	42	573	21	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	42
	R-1	575	27	612	18	575	40	575	27	612	18	495	12	492	12	571	5	495	12	574	9
	R-2	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	571	43
	G-1	575	27	571	35	571	18	571	18	571	18	575	27	576	35	575	27	574	5		
	G-2	575	12	571	20	571	35	573	42	571	9	573	42	571	5	575	30	571	5	572	47
	Y-1	575	27	571	18	571	53	571	35	571	18	571	53	571	35	576	17	571	35	576	54
Y-2	575	27	571	18	571	53	571	35	571	27	612	18	612	18	576	8	612	18	574	9	
Chip		575	27	571	42	575	27	575	27	571	35	575	27	571	35	576	32	571	35	574	9

TABLE 70

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 16	W	573	21	573	10	573	42	573	42	573	10	573	21	573	10	573	42	573	21	573	42
	R-1	573	21	573	17	573	24	573	24	573	12	573	24	573	24	573	24	573	24	573	18
	R-2	573	53	573	35	573	68	573	53	573	35	573	53	573	35	573	42	573	35	573	32
	G-1	573	9	573	5	573	18	573	4	573	8	573	18	573	9	573	8	573	9	573	8
	G-2	573	2	573	6	573	12	573	12	573	21	573	8	573	2	573	42	573	3	573	68
	Y-1	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
	Y-2	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
Chip		507	67	499	27	561	31	493	32	492	36	612	37	486	37	575	61	551	40	575	61
PROJ. PR. NO. 17	W	573	21	573	10	573	21	573	42	573	10	573	21	573	10	573	42	573	10	573	21
	R-1	573	21	573	17	573	24	573	24	573	12	573	24	573	24	573	24	573	24	573	18
	R-2	573	53	573	35	573	68	573	53	573	35	573	53	573	35	573	42	573	35	573	32
	G-1	573	9	573	5	573	18	573	4	573	8	573	18	573	9	573	8	573	9	573	8
	G-2	573	2	573	6	573	12	573	12	573	21	573	8	573	2	573	42	573	3	573	68
	Y-1	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
	Y-2	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
Chip		507	67	499	27	561	31	493	32	492	36	612	37	486	37	575	61	551	40	575	61
PROJ. PR. NO. 18	W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	17
	R-1	573	17	573	24	573	24	573	24	573	24	573	24	573	24	573	24	573	24	573	18
	R-2	573	53	573	35	573	68	573	53	573	35	573	53	573	35	573	42	573	35	573	32
	G-1	573	9	573	5	573	18	573	4	573	8	573	18	573	9	573	8	573	9	573	8
	G-2	573	2	573	6	573	12	573	12	573	21	573	8	573	2	573	42	573	3	573	68
	Y-1	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
	Y-2	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
Chip		507	67	499	27	561	31	493	32	492	36	612	37	486	37	575	61	551	40	575	61
PROJ. PR. NO. 19	W	573	6	573	6	573	6	573	6	573	6	573	6	573	6	573	6	573	6	573	40
	R-1	573	17	573	24	573	24	573	24	573	24	573	24	573	24	573	24	573	24	573	18
	R-2	573	53	573	35	573	68	573	53	573	35	573	53	573	35	573	42	573	35	573	32
	G-1	573	9	573	5	573	18	573	4	573	8	573	18	573	9	573	8	573	9	573	8
	G-2	573	2	573	6	573	12	573	12	573	21	573	8	573	2	573	42	573	3	573	68
	Y-1	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
	Y-2	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
Chip		507	67	499	27	561	31	493	32	492	36	612	37	486	37	575	61	551	40	575	61
PROJ. PR. NO. 20	W	573	5	573	5	573	5	573	5	573	5	573	5	573	5	573	5	573	5	573	21
	R-1	573	17	573	24	573	24	573	24	573	24	573	24	573	24	573	24	573	24	573	18
	R-2	573	53	573	35	573	68	573	53	573	35	573	53	573	35	573	42	573	35	573	32
	G-1	573	9	573	5	573	18	573	4	573	8	573	18	573	9	573	8	573	9	573	8
	G-2	573	2	573	6	573	12	573	12	573	21	573	8	573	2	573	42	573	3	573	68
	Y-1	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48
	Y-2	573	21	573	10	573	42	573	42	573	21	573	42	573	21	573	42	573	21	573	48

TABLE 7/

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

		1		2		3		4		5		6		7		8		9		back		
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	
PROJ. PR. No. 2/	AMB. ILL. W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	
	R-1	455	17	478	22	487	24	487	36	455	24	455	31	455	24	455	17	455	24	486	4	
	R-2	577	35	577	53	577	35	577	18	577	53	577	35	577	35	577	8	577	35	566	8	
	G-1	478	5	455	4	478	11	478	11	566	4	478	5	566	4	478	13	566	4	566	8	
	G-2	551	5	551	10	498	3	575	11	583	21	574	5	551	5	575	18	574	5	573	42	
	Y-1	478	5	478	5	478	5	478	5	478	5	478	5	478	5	478	5	478	5	572	17	
Y-2	566	8	566	8	471	12	471	24	566	17	566	8	566	24	471	6	566	24	612	4		
Chip		478	6	566	17	478	6	478	23	566	17	478	6	566	17	478	23	566	17	612	4	
PROJ. PR. No. 22	AMB. ILL. W	572	17	572	32	572	17	572	17	572	32	572	17	572	32	572	11	572	17	572	17	
	R-1	577	53	577	68	566	24	566	31	575	48	575	30	575	30	575	31	575	30	566	24	
	R-2	577	53	577	62	577	53	577	53	577	62	577	53	577	62	577	18	577	62	455	24	
	G-1	455	24	471	24	566	24	566	24	573	42	566	24	573	42	566	24	573	42	478	22	
	G-2	574	2	575	30	478	6	478	9	572	17	551	5	566	35	566	8	566	17	532	16	
	Y-1	572	17	572	32	572	17	572	17	572	32	572	17	572	32	566	24	572	32	566	31	
Y-2	575	48	575	61	566	16	566	16	575	61	575	30	575	61	566	32	575	61	566	32		
Chip		575	30	575	48	566	17	566	17	575	48	575	30	575	48	566	24	575	48	566	24	
PROJ. PR. No. 23	AMB. ILL. W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	478	6	573	10	478	6	
	R-1	575	27	612	18	575	27	455	17	577	35	573	42	577	35	478	3	577	35	478	9	
	R-2	577	33	577	53	577	33	577	35	577	53	577	33	577	53	577	18	577	33	577	31	
	G-1	577	18	577	8	573	42	455	4	566	8	—	455	4	478	22	455	4	478	22	455	3
	G-2	573	5	575	12	574	5	478	6	577	18	566	8	577	18	574	9	573	21	551	20	
	Y-1	577	33	577	53	577	18	577	18	577	35	577	18	577	35	574	5	577	35	574	15	
Y-2	577	5	573	42	573	21	573	21	577	35	577	18	573	42	478	12	577	35	478	12		
Chip		573	62	573	42	573	21	573	8	577	35	573	42	577	35	478	24	577	35	478	25	
PROJ. PR. No. 24	AMB. ILL. W	573	21	573	21	573	21	573	21	573	21	573	21	573	21	577	10	573	21	577	10	
	R-1	577	35	575	27	455	8	455	8	575	27	577	35	575	27	566	8	575	40	574	5	
	R-2	575	40	575	40	575	40	575	27	575	40	575	40	575	40	575	12	575	40	577	43	
	G-1	612	18	612	9	551	5	566	8	574	5	612	18	612	18	566	35	612	18	478	13	
	G-2	551	10	577	18	551	10	574	5	612	9	551	10	573	10	551	20	573	21	566	34	
	Y-1	573	42	573	62	573	42	573	10	573	62	573	42	573	42	573	17	573	62	566	35	
Y-2	575	27	577	53	566	8	566	8	575	27	575	27	612	18	566	8	612	18	478	13		
Chip		573	42	577	25	573	42	573	21	577	35	577	18	575	27	478	7	575	27	478	6	
PROJ. PR. No. 25	AMB. ILL. W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	11	573	10	573	17	
	R-1	577	18	575	27	612	18	612	18	478	12	612	18	612	18	612	9	612	18	478	3	
	R-2	577	53	577	53	577	53	577	35	577	53	577	53	577	53	575	30	577	53	566	34	
	G-1	612	18	575	27	575	12	575	12	575	6	—	612	18	566	35	612	18	577	10		
	G-2	577	18	566	8	573	21	578	18	566	8	573	10	551	5	575	18	573	5	573	42	
	Y-1	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	18	575	6	575	30	
Y-2	573	42	575	27	612	18	612	18	478	12	612	18	612	18	566	8	612	18	574	5		
Chip		573	42	575	6	573	21	573	21	573	42	577	18	575	27	566	16	573	5	566	16	

TABLE 72

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair /2

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 26	AMB. ILL. W	587	8	587	8	587	8	587	8	587	8	587	8	587	8	587	8	587	8	587	35
	R-1	587	18	455	17	455	24	455	24	455	17	566	24	455	24	566	24	455	24	587	12
	R-2	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	17
	G-1	587	8	455	8	587	8	455	8	478	11	587	4	455	4	587	35	587	17	612	4
	G-2	587	17	587	10	587	12	587	21	499	6	587	10	587	10	587	21	587	10	587	53
	Y-1	587	12	587	6	587	12	587	12	587	6	587	12	587	12	587	27	587	12	587	40
	Y-2	587	12	455	4	587	16	587	16	481	12	587	16	481	12	587	16	481	12	587	6
	Chip	587	21	481	12	587	35	587	18	481	12	587	16	481	12	587	6	481	12	612	9
		587	67	499	27	566	31	455	33	492	36	612	37	486	37	587	61	551	40	WHITE	
PROJ. PR. NO. 27	AMB. ILL. W	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6
	R-1	587	12	455	17	566	24	455	17	566	17	566	17	566	17	566	31	566	24	587	4
	R-2	587	53	587	35	587	53	587	53	587	35	587	53	587	35	587	42	587	35	587	2
	G-1	455	4	566	4	587	4	587	4	455	8	455	4	587	4	566	17	587	4	587	6
	G-2	587	10	587	5	587	5	587	10	587	20	587	21	587	10	587	21	587	5	587	42
	Y-1	587	12	587	12	587	12	587	12	587	12	587	12	587	12	587	27	587	12	587	27
	Y-2	587	42	587	5	566	17	566	17	587	5	612	18	612	18	612	9	612	18	612	4
	Chip	587	21	455	17	587	21	587	21	455	17	587	42	455	8	587	35	455	8	587	8
		587	67	499	27	566	31	455	33	492	36	612	37	486	37	587	61	551	40	WHITE	
PROJ. PR. NO. 28	AMB. ILL. W	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6
	R-1	587	12	455	17	566	24	455	17	566	17	566	17	566	17	566	31	566	24	587	4
	R-2	587	53	587	35	587	53	587	53	587	35	587	53	587	35	587	42	587	35	587	2
	G-1	455	4	566	4	587	4	587	4	455	8	455	4	587	4	566	17	587	4	587	6
	G-2	587	10	587	5	587	5	587	10	587	20	587	21	587	10	587	21	587	5	587	42
	Y-1	587	12	587	12	587	12	587	12	587	12	587	12	587	12	587	27	587	12	587	27
	Y-2	587	42	587	5	566	17	566	17	587	5	612	18	612	18	612	9	612	18	612	4
	Chip	587	21	455	17	587	21	587	21	455	17	587	42	455	8	587	35	455	8	587	8
		587	67	499	27	566	31	455	33	492	36	612	37	486	37	587	61	551	40	WHITE	
PROJ. PR. NO. 29	AMB. ILL. W	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6
	R-1	587	12	455	17	566	24	455	17	566	17	566	17	566	17	566	31	566	24	587	4
	R-2	587	53	587	35	587	53	587	53	587	35	587	53	587	35	587	42	587	35	587	2
	G-1	455	4	566	4	587	4	587	4	455	8	455	4	587	4	566	17	587	4	587	6
	G-2	587	10	587	5	587	5	587	10	587	20	587	21	587	10	587	21	587	5	587	42
	Y-1	587	12	587	12	587	12	587	12	587	12	587	12	587	12	587	27	587	12	587	27
	Y-2	587	42	587	5	566	17	566	17	587	5	612	18	612	18	612	9	612	18	612	4
	Chip	587	21	455	17	587	21	587	21	455	17	587	42	455	8	587	35	455	8	587	8
		587	67	499	27	566	31	455	33	492	36	612	37	486	37	587	61	551	40	WHITE	
PROJ. PR. NO. 30	AMB. ILL. W	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6	587	6
	R-1	587	12	455	17	566	24	455	17	566	17	566	17	566	17	566	31	566	24	587	4
	R-2	587	53	587	35	587	53	587	53	587	35	587	53	587	35	587	42	587	35	587	2
	G-1	455	4	566	4	587	4	587	4	455	8	455	4	587	4	566	17	587	4	587	6
	G-2	587	10	587	5	587	5	587	10	587	20	587	21	587	10	587	21	587	5	587	42
	Y-1	587	12	587	12	587	12	587	12	587	12	587	12	587	12	587	27	587	12	587	27
	Y-2	587	42	587	5	566	17	566	17	587	5	612	18	612	18	612	9	612	18	612	4
	Chip	587	21	455	17	587	21	587	21	455	17	587	42	455	8	587	35	455	8	587	8
		587	67	499	27	566	31	455	33	492	36	612	37	486	37	587	61	551	40	WHITE	

TABLE 72 a

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	AMB. ILL. W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	572	11	583	42	486	25
	ILL. W	583	32	586	24	586	32	492	17	586	24	586	32	586	24	612	4	586	24	478	22
	R-1	587	53	587	40	587	53	587	53	587	40	587	53	587	53	488	34	587	40	488	34
	R-2	455	18	612	26	455	8	455	8	612	26	583	42	583	21	572	17	583	21	481	36
	G-1	486	7	612	4	586	17	586	8	583	21	575	18	587	18	481	12	585	12	486	37
	G-2	583	42	583	62	583	42	583	42	583	78	583	42	583	62	481	12	583	62	481	24
	Y-1	586	32	586	16	586	24	586	24	612	26	572	32	585	40	481	6	585	54	455	18
Y-2	486	30	575	30	486	15	575	48	575	18	575	30	575	30	575	6	575	30	478	32	
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 2	AMB. ILL. W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	486	13	587	35	486	25
	ILL. W	586	24	586	16	586	24	586	32	586	16	586	24	486	22	478	5	586	24	481	24
	R-1	585	40	585	40	585	40	585	40	585	40	585	40	585	40	492	27	585	40	492	36
	R-2	583	42	586	17	583	42	583	42	612	26	583	42	455	8	572	11	455	8	481	36
	G-1	492	3	587	18	586	17	551	5	583	10	551	10	585	6	492	9	587	18	488	23
	G-2	587	35	587	53	587	35	587	35	587	53	587	35	587	53	488	23	587	35	587	53
	Y-1	586	8	585	40	586	8	586	24	612	18	586	8	587	63	486	7	587	53	478	32
Y-2	586	8	583	62	575	30	587	53	575	30	586	17	583	62	612	4	583	42	481	36	
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 3	AMB. ILL. W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	586	4
	ILL. W	587	35	583	42	587	35	587	35	583	42	587	35	583	42	586	17	583	42	586	8
	R-1	585	40	585	64	585	40	585	40	585	54	585	40	585	40	492	3	585	54	492	27
	R-2	583	42	586	17	583	42	583	42	586	17	583	62	455	18	572	17	455	8	455	4
	G-1	551	10	584	5	586	35	586	17	586	17	586	17	551	10	486	5	551	5	486	22
	G-2	585	11	583	21	575	11	575	11	583	42	575	18	583	42	583	11	583	42	586	32
	Y-1	583	42	587	18	583	42	587	35	587	8	583	42	587	35	586	4	587	35	586	16
Y-2	575	30	585	48	575	30	575	30	575	48	575	30	586	24	586	4	586	24	586	17	
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 4	AMB. ILL. W	572	17	572	17	572	32	572	17	572	17	572	32	572	17	586	16	572	17	586	24
	ILL. W	585	40	583	21	587	53	587	35	455	18	583	42	455	18	492	6	583	21	586	19
	R-1	585	54	585	64	585	54	585	54	585	54	585	54	585	54	492	19	585	54	586	26
	R-2	585	27	586	17	585	27	586	24	586	24	586	24	586	8	586	4	586	17	586	32
	G-1	586	17	551	10	488	12	586	17	586	8	586	17	586	17	492	6	551	10	492	26
	G-2	575	48	575	18	575	30	575	30	575	11	575	30	575	11	486	22	575	11	486	30
	Y-1	583	42	586	17	583	42	586	17	455	18	583	42	455	18	612	9	455	18	612	46
Y-2	575	48	575	30	587	53	575	30	455	26	575	48	455	26	575	6	455	26	586	32	
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 5	AMB. ILL. W	572	32	572	17	572	32	572	32	572	17	572	32	572	17	572	11	572	17	586	24
	ILL. W	585	48	586	17	575	48	575	30	455	18	575	48	572	60	586	8	455	18	586	32
	R-1	585	40	585	40	585	40	585	40	585	40	585	40	585	40	486	30	585	40	486	30
	R-2	455	4	586	4	612	18	586	4	478	5	455	8	585	12	586	4	585	6	586	31
	G-1	586	17	551	10	586	17	586	17	586	17	586	35	586	17	575	11	586	35	586	32
	G-2	572	47	572	32	572	32	572	32	572	17	572	32	572	17	486	11	572	11	486	15
	Y-1	575	48	586	17	575	48	575	48	586	17	575	48	586	24	612	4	612	18	612	50
Y-2	575	30	575	48	575	48	575	30	575	0	575	48	455	18	586	32	455	18	586	32	

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TABLE 74

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

1 2 3 4 5 6 7 8 9 back
 λ Pe λ Pe λ Pe λ Pe λ Pe λ Pe λ Pe λ Pe λ Pe

PROJ. PR. No. //	AMB. ILL. W	583 10	583 10	583 10	583 10	583 10	583 10	583 10	499 6	583 10	499 6		
	R-1	595 27	492 12	612 18	612 18	492 12	595 27	612 18	499 3	612 18	492 3		
	R-2	587 68	595 54	587 68	587 68	595 54	587 68	595 54	499 13	587 68	499 27		
	G-1	583 42	583 21	587 35	587 18	612 12	587 18	595 27	492 3	595 12	487 6		
	G-2	492 4	478 5	587 8	551 5	587 8	583 10	586 17	572 17	551 10	572 17		
	Y-1	612 9	612 4	612 9	612 4	612 9	612 4	499 6	612 4	499 13			
	Y-2	586 18	612 18	595 27	612 18	492 12	583 42	612 18	492 3	612 18	499 3		
Chip		583 42	587 35	595 27	587 18	587 35	583 42	587 35	612 4	587 35	492 25		
		587 67	499 27	5610 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE		

PROJ. PR. No. /2	AMB. ILL. W	583 42	583 42	583 42	583 42	583 42	583 42	583 42	583 21	583 42	583 42		
	R-1	583 42	583 42	587 35	595 27	612 18	595 27	612 18	514 2	492 12	551 20		
	R-2	595 40	595 54	595 40	595 40	595 54	595 40	595 54	586 35	595 54	551 43		
	G-1	587 35	587 18	587 35	587 35	595 54	595 27	612 18	586 17	612 18	514 20		
	G-2	595 6	481 6	587 8	499 3	486 7	587 18	586 4	575 18	492 3	595 61		
	Y-1	587 35	587 53	587 35	587 35	587 18	587 35	587 18	572 32	587 35	572 47		
	Y-2	583 42	587 35	583 62	587 53	587 18	587 35	612 18	586 8	612 18	551 20		
Chip		583 42	612 18	595 27	612 18	612 18	587 35	612 18	586 17	612 18	551 31		
		587 67	499 27	5610 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE		

PROJ. PR. No. /3	AMB. ILL. W	583 10	586 8	583 10	583 10	586 8	583 10	586 8	575 18	586 8	575 30		
	R-1	492 15	455 18	586 24	586 24	481 12	586 24	481 12	586 24	481 12	583 21		
	R-2	595 40	595 40	595 40	595 40	595 40	595 40	595 40	572 11	595 40	572 17		
	G-1	595 12	595 6	595 6	586 4	495 4	595 12	586 4	492 5	612 18	514 2		
	G-2	587 18	514 7	583 10	481 6	499 3	587 18	551 5	595 30	586 8	583 62		
	Y-1	583 21	583 10	583 21	583 21	583 10	583 21	583 10	575 30	583 10	575 48		
	Y-2	586 17	551 5	586 16	551 10	551 5	586 24	551 10	481 6	583 10	575 8		
Chip		586 8	514 2	586 16	514 2	574 2	492 15	574 2	492 3	574 2	575 30		
		587 67	499 27	5610 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE		

PROJ. PR. No. //	AMB. ILL. W	586 8	514 8	586 8	586 8	586 8	586 8	586 8	586 17	586 8	586 17		
	R-1	595 27	587 35	595 27	595 27	612 18	595 27	586 17	595 12	586 17	514 2		
	R-2	595 40	595 40	595 40	595 40	595 40	595 40	595 40	572 17	595 40	572 32		
	G-1	595 27	595 12	595 12	595 27	612 18	595 12	595 27	586 8	612 18	499 6		
	G-2	612 4	551 10	583 10	551 10	499 6	587 18	486 6	575 11	574 5	586 54		
	Y-1	583 21	583 10	583 21	583 21	583 10	583 21	583 10	586 35	583 10	586 35		
	Y-2	586 8	583 21	612 18	612 18	492 12	595 27	612 18	499 3	612 18	514 2		
Chip		583 21	586 16	492 15	492 5	583 21	587 35	492 15	551 5	492 15	586 17		
		587 67	499 27	5610 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE		

PROJ. PR. No. /5	AMB. ILL. W	583 42	583 42	583 42	583 42	583 42	583 42	583 42	586 35	583 42	586 54		
	R-1	587 35	612 18	587 35	595 27	595 27	587 35	612 18	586 8	612 18	551 5		
	R-2	595 40	595 54	595 40	595 40	595 54	595 40	595 54	586 35	595 54	574 20		
	G-1	612 18	612 9	595 27	612 18	595 27	587 35	595 27	586 8	575 27	574 9		
	G-2	586 8	486 7	492 3	583 10	551 5	583 21	586 8	575 11	499 3	551 20		
	Y-1	587 35	587 53	587 35	587 35	587 53	587 35	587 53	586 35	587 35	586 35		
	Y-2	587 18	595 27	583 42	595 27	492 12	587 35	612 18	586 8	612 18	499 3		
		583 21	612 18	587 35	612 18	612 18	587 35	612 18	486 7	612 18	514 9		

TABLE 75

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16	AMB. ILL. W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	595	27	583	10	595	27
	R-1	612	18	455	18	586	17	586	17	486	13	586	24	486	13	586	8	486	13	585	27
	R-2	587	53	587	53	587	53	587	53	587	53	587	53	587	53	575	11	587	53	575	30
	G-1	586	8	455	8	455	8	478	11	478	11	455	8	455	4	486	7	478	5	583	21
	G-2	583	21	514	5	583	10	583	10	499	6	587	18	551	10	575	18	551	10	587	68
	Y-1	595	12	595	6	595	12	595	12	595	6	595	12	595	6	595	12	595	6	595	54
	Y-2	551	5	499	3	551	5	551	5	488	6	586	24	499	3	587	8	551	5	587	18
	Chip	498	15	499	3	586	17	586	17	499	3	498	15	499	3	498	5	499	3	587	18
PROJ. PR. No. 17	AMB. ILL. W	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	R-1	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	42	583	10	583	42
	R-2	583	21	586	17	586	24	586	24	478	11	586	31	586	24	455	4	586	17	587	8
	G-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	572	17	587	53	572	32
	G-2	455	4	455	8	455	8	455	4	455	8	538	4	455	8	538	4	586	8	575	30
	Y-1	583	10	514	5	499	3	499	3	478	5	595	6	551	10	583	42	551	10	583	78
	Y-2	583	10	583	10	583	10	583	10	583	10	583	10	583	10	575	30	583	10	575	48
	Chip	583	42	455	8	586	17	586	16	499	3	586	17	499	3	587	18	499	3	587	18
PROJ. PR. No. 18	AMB. ILL. W	566	8	538	8	586	17	538	8	586	8	586	16	586	8	583	10	586	8	583	10
	R-1	587	18	587	18	587	18	587	18	587	18	587	18	587	18	572	11	587	18	572	17
	R-2	586	17	586	8	586	17	586	17	612	37	586	8	586	24	492	3	586	24	651	5
	G-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	551	20	595	54	514	15
	G-2	586	4	612	37	586	8	586	8	612	37	586	4	586	8	586	17	586	16	499	3
	Y-1	551	5	514	2	514	5	595	6	486	7	583	21	478	5	575	18	514	2	583	62
	Y-2	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	32
	Chip	583	42	587	18	586	16	586	16	587	18	583	42	612	37	574	2	612	37	492	3
PROJ. PR. No. 19	AMB. ILL. W	566	8	538	16	586	17	583	10	583	24	586	16	586	16	572	17	586	16	499	3
	R-1	587	18	587	18	587	18	587	18	587	18	587	18	587	18	572	11	587	18	572	17
	R-2	586	17	586	8	586	17	586	17	612	37	586	8	586	24	492	3	586	24	651	5
	G-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	551	20	595	54	514	15
	G-2	586	4	612	37	586	8	586	8	612	37	586	4	586	8	586	17	586	16	499	3
	Y-1	551	5	514	2	514	5	595	6	486	7	583	21	478	5	575	18	514	2	583	62
	Y-2	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	32
	Chip	583	42	587	18	586	16	586	16	587	18	583	42	612	37	574	2	612	37	492	3
PROJ. PR. No. 20	AMB. ILL. W	566	8	538	16	586	17	583	10	583	24	586	16	586	16	572	17	586	16	499	3
	R-1	587	18	587	18	587	18	587	18	587	18	587	18	587	18	572	11	587	18	572	17
	R-2	586	17	586	8	586	17	586	17	612	37	586	8	586	24	492	3	586	24	651	5
	G-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	551	20	595	54	514	15
	G-2	586	4	612	37	586	8	586	8	612	37	586	4	586	8	586	17	586	16	499	3
	Y-1	551	5	514	2	514	5	595	6	486	7	583	21	478	5	575	18	514	2	583	62
	Y-2	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	32
	Chip	583	42	587	18	586	16	586	16	587	18	583	42	612	37	574	2	612	37	492	3

TABLE 76

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	W	561c	4	561c	4	561c	4	561c	4	561c	4
	ILL. W	583	21	455	8	561c	17	561c	8	583c	16
	R-1	587	53	595	54	587	53	595	54	587	53
	R-2	561c	8	612c	5	561c	4	561c	4	587	53
	G-1	499	3	514	5	583	10	587	8	583	10
	G-2	575	11	575	11	575	11	575	11	575	11
	Y-1	561c	4	583	21	561c	8	561c	8	561c	4
	Y-2	561c	8	561c	17	583c	16	561c	17	583c	16
Chip		587	67	499	27	561c	31	455	33	492	36
PROJ. PR. No. 22	W	575	18	575	30	575	18	575	30	575	18
	ILL. W	455	26	575	40	575	48	575	61	575	61
	R-1	587	53	587	53	587	53	587	53	587	53
	R-2	561c	24	583	42	561c	17	583	42	561c	24
	G-1	551	10	566	35	551	10	566	35	551	10
	G-2	572	32	572	47	572	47	572	47	572	32
	Y-1	583	21	575	61	583	42	575	61	583	21
	Y-2	575	30	575	61	575	48	575	61	575	30
Chip		587	67	499	27	561c	31	455	33	492	36
PROJ. PR. No. 23	W	583	42	583	42	583	42	583	42	583	42
	ILL. W	551	20	595	27	551	20	595	27	551	20
	R-1	587	53	587	53	587	53	587	53	587	53
	R-2	551	10	595	27	583	42	583	42	583	42
	G-1	499	6	587	18	583	10	595	12	551	10
	G-2	551	10	587	53	551	5	587	53	551	5
	Y-1	566	8	583	21	587	35	587	35	587	35
	Y-2	566	8	583	21	587	35	587	35	587	35
Chip		587	67	499	27	561c	31	455	33	492	36
PROJ. PR. No. 24	W	587	35	587	35	587	35	587	35	587	35
	ILL. W	595	27	612	28	587	35	595	27	612	28
	R-1	595	40	595	54	595	40	595	54	595	40
	R-2	583	42	595	27	587	35	587	35	587	35
	G-1	583	10	587	8	551	5	583	10	587	18
	G-2	587	35	587	68	587	35	587	35	587	35
	Y-1	583	42	587	35	595	27	595	40	583	42
	Y-2	583	42	587	35	612	28	595	27	612	28
Chip		587	67	499	27	561c	31	455	33	492	36
PROJ. PR. No. 25	W	583	42	583	42	583	42	583	42	583	42
	ILL. W	587	35	612	18	595	27	612	18	586	8
	R-1	595	40	595	54	595	40	595	54	595	40
	R-2	583	42	595	40	583	42	583	42	583	42
	G-1	587	18	595	12	551	5	486	7	583	21
	G-2	499	3	499	3	499	3	499	3	499	3
	Y-1	595	27	583	10	587	35	612	18	586	8
	Y-2	583	42	587	18	587	35	583	42	583	42

TABLE 77

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

	1		2		3		4		5		6		7		8		9		back	
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 26																				
AMB. ILL. W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	27	595	6	595	40
R-1	612	18	455	8	561	17	561	8	455	8	561	24	455	8	561	24	455	18	595	27
R-2	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35
G-1	587	35	587	18	587	18	587	18	478	5	587	18	455	4	536	4	455	4	595	6
G-2	583	21	551	5	583	10	566	8	514	5	583	10	551	10	583	42	551	10	595	40
Y-1	612	18	612	9	612	18	612	18	612	9	612	18	612	4	612	28	612	4	612	37
Y-2	481	12	486	13	583	21	481	12	486	7	561	17	486	7	595	12	486	7	595	27
Chip	587	18	481	6	587	18	481	6	481	6	536	24	481	6	595	27	481	6	612	28
	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. No. 27																				
AMB. ILL. W	517	8	587	8	517	8	587	8	587	8	587	8	587	8	587	35	587	8	587	35
R-1	561	24	455	18	561	17	561	17	455	18	561	24	455	26	561	17	455	18	595	12
R-2	595	40	595	40	595	40	595	40	595	40	595	40	595	40	455	4	595	40	455	4
G-1	561	8	561	4	561	4	561	8	587	18	587	8	595	12	514	2	595	12	486	7
G-2	551	5	514	2	514	5	551	10	486	13	587	18	551	5	595	18	551	10	587	53
Y-1	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	24
Y-2	566	8	551	5	561	17	561	17	499	3	561	17	566	17	612	4	566	8	612	4
Chip	455	4	481	6	536	16	481	6	481	6	536	16	481	6	595	12	481	6	612	4
	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. No.																				
AMB. ILL. W	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
R-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
R-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
G-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
G-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Y-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Y-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Chip	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. No.																				
AMB. ILL. W	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
R-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
R-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
G-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
G-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Y-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Y-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Chip	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. No.																				
AMB. ILL. W	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
R-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
R-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
G-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
G-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Y-1	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Y-2	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
Chip	587	37	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

TABLE 78

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 1	W	575	48	575	48	575	30	572	32	575	30	575	30	575	30	575	30	575	30	575	30
	ILL. W	538	32	612	28	572	47	572	47	538	24	572	32	575	30	538	16	612	28	481	24
	R-1	595	40	595	40	595	27	595	27	595	40	595	27	595	40	486	25	595	27	486	37
	R-2	455	18	566	17	575	48	575	48	566	17	566	8	455	8	455	4	455	8	481	24
	G-1	572	17	583	21	566	17	572	32	566	8	575	11	583	10	478	11	566	17	481	24
	G-2	575	30	575	48	575	30	572	47	575	30	575	30	575	61	575	11	575	48	455	33
	Y-1	575	48	575	30	575	48	575	61	575	30	575	48	595	27	538	8	575	27	455	18
Y-2	575	48	486	22	575	48	575	61	486	22	575	48	486	22	575	6	486	22	478	32	
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 2	W	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	30
	ILL. W	538	24	612	18	572	32	572	32	538	24	572	32	575	30	538	16	612	18	481	24
	R-1	595	54	595	40	587	53	587	53	595	40	595	40	595	40	488	23	595	27	488	23
	R-2	566	17	566	8	566	54	566	54	566	8	566	17	455	8	492	3	455	18	488	34
	G-1	575	11	583	21	572	32	572	17	566	17	575	18	566	17	481	12	566	8	481	24
	G-2	587	53	587	68	575	30	575	30	583	24	575	48	587	35	478	11	587	35	478	11
	Y-1	575	48	538	16	575	61	575	61	538	24	575	48	538	24	595	6	538	16	578	32
Y-2	575	30	486	22	575	48	575	48	486	22	575	30	575	48	575	6	575	30	478	32	
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 3	W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11
	ILL. W	575	48	575	30	572	32	572	47	575	30	575	48	575	30	538	16	575	30	538	16
	R-1	587	68	587	68	587	53	583	24	587	53	587	35	587	53	455	26	587	53	455	26
	R-2	583	42	566	17	583	42	575	48	566	17	455	8	455	8	455	4	455	8	455	18
	G-1	551	10	566	17	572	32	572	32	566	35	572	17	566	17	538	8	566	17	486	15
	G-2	572	11	572	11	572	17	572	32	572	11	572	17	572	11	538	16	572	11	538	32
	Y-1	575	48	575	30	575	48	575	61	575	30	575	48	538	16	538	4	538	16	538	16
Y-2	575	48	575	30	575	48	575	48	575	30	486	15	575	30	538	4	575	30	566	24	
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 4	W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11
	ILL. W	566	17	566	17	595	40	595	54	455	18	595	40	455	18	595	27	455	18	538	32
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	486	30	595	40	486	30
	R-2	486	15	538	8	486	12	486	12	455	8	486	8	566	8	566	4	566	8	538	32
	G-1	551	10	551	10	572	32	572	32	566	35	572	32	551	10	575	18	551	10	486	19
	G-2	575	11	575	11	575	30	575	30	575	11	575	18	575	11	575	15	575	30	486	22
	Y-1	575	48	566	17	575	61	575	61	566	17	575	61	575	48	538	4	575	61	538	32
Y-2	575	61	575	48	575	61	575	61	575	48	575	61	575	61	575	12	575	48	538	32	
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 5	W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11
	ILL. W	572	32	572	32	572	47	572	47	572	47	572	32	572	32	538	32	572	32	538	32
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	486	19	587	53	486	19
	R-2	595	27	566	4	566	4	566	4	595	12	587	18	595	12	455	4	595	12	538	32
	G-1	566	17	551	10	572	32	572	32	551	10	572	17	566	17	575	11	566	35	486	15
	G-2	572	47	572	32	572	47	572	47	572	17	572	32	572	17	566	31	572	32	566	31
	Y-1	575	48	575	61	575	61	575	61	575	48	575	61	575	61	538	4	575	48	538	32
Y-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	538	32	575	61	538	32	

TABLE 79

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 6	AMB. ILL. W	575 18	575 13	575 13	575 36	575 12	575 30	575 30	575 30	575 11	575 30	575 11	575 30	575 24	575 30	575 24	575 30	575 24	575 30	575 24	
	R-1	575 48	575 30	572 32	572 47	575 30	575 48	575 30	575 48	575 30	575 48	575 30	575 48	575 30	575 48	575 30	575 48	575 30	575 48	575 30	
	R-2	587 53	587 68	587 53	583 42	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	
	G-1	575 30	583 42	575 30	575 30	586 17	583 21	478 11	478 5	478 11	478 5	478 11	478 5	478 11	478 5	478 11	478 5	478 11	478 5	478 11	
	G-2	586 17	586 35	575 30	572 32	586 35	572 17	586 17	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	
	Y-1	572 11	572 11	572 32	572 47	572 17	572 17	572 17	572 17	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	572 11	
Chip	Y-2	575 30	575 48	575 61	575 61	575 48	575 48	575 48	575 48	575 48	575 48	575 48	575 48	575 48	575 48	575 48	575 48	575 48	575 48	575 48	
	Chip	575 30	575 30	575 48	575 48	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	575 30	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
PROJ. PR. No. 7	AMB. ILL. W	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	583 62	
	R-1	587 53	595 40	587 53	583 62	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	
	R-2	587 53	587 68	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	
	G-1	595 27	595 40	595 27	587 35	587 35	583 42	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	
	G-2	587 1	583 21	595 6	583 10	583 10	583 10	587 18	551 10	583 21	586 8	572 17	586 8	572 17	586 8	572 17	586 8	572 17	586 8	572 17	
	Y-1	587 53	587 68	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	
Chip	Y-2	581 8	587 53	583 62	581 5	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	
	Chip	587 35	595 27	587 35	587 35	595 27	595 27	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
PROJ. PR. No. 8	AMB. ILL. W	587 35	595 27	583 42	595 27	612 18	595 27	595 27	595 27	595 27	595 27	595 27	595 27	595 27	595 27	595 27	595 27	595 27	595 27	595 27	
	R-1	587 53	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	595 40	
	R-2	587 53	587 68	587 53	587 35	587 35	587 18	587 18	587 18	587 18	587 18	587 18	587 18	587 18	587 18	587 18	587 18	587 18	587 18	587 18	
	G-1	595 27	595 40	595 27	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	
	G-2	583 10	586 8	575 18	587 18	551 10	583 21	586 8	572 17	586 8	572 17	586 8	572 17	586 8	572 17	586 8	572 17	586 8	572 17	586 8	
	Y-1	583 21	583 21	583 62	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	583 42	583 21	
Chip	Y-2	583 42	587 18	583 42	583 42	587 35	583 42	587 35	583 42	587 35	583 42	587 35	583 42	587 35	583 42	587 35	583 42	587 35	583 42	587 35	
	Chip	583 42	587 35	595 27	595 27	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
PROJ. PR. No. 9	AMB. ILL. W	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	
	R-1	583 42	586 16	595 40	595 40	586 16	595 27	586 16	586 8	586 16	592 3	586 16	592 3	586 16	592 3	586 16	592 3	586 16	592 3	586 16	
	R-2	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	587 35	
	G-1	586 8	551 5	595 40	595 27	586 17	595 27	595 12	586 7	595 27	586 6	586 17	595 27	586 6	586 17	595 27	586 6	586 17	595 27	586 6	
	G-2	551 5	551 10	575 18	575 30	551 10	587 18	551 10	575 18	551 10	575 18	551 10	575 18	551 10	575 18	551 10	575 18	551 10	575 18	551 10	
	Y-1	587 8	587 8	587 35	587 35	587 8	587 18	587 8	586 8	587 8	586 8	587 8	586 8	587 8	586 8	587 8	586 8	587 8	586 8	587 8	
Chip	Y-2	586 8	551 5	595 27	583 42	586 8	583 42	586 8	583 42	586 8	583 42	586 8	583 42	586 8	583 42	586 8	583 42	586 8	583 42	586 8	
	Chip	586 8	551 5	595 27	595 27	551 5	587 35	551 5	587 35	551 5	587 35	551 5	587 35	551 5	587 35	551 5	587 35	551 5	587 35	551 5	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
	Chip	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	WHITE	587 67	499 27	561 31	455 33	492 36	612 37	486 37	575 61	551 40	
PROJ. PR. No. 10	AMB. ILL. W	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	499 3	
	R-1	583 42	587 35	587 53	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	587 53	587 35	
	R-2	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	587 53	
	G-1	586 15	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	586 17	
	G-2	551 5	551 10	583 21	583 10	551 5	583 10	551 5	583 10	551 5	583 10	551 5	583 10	551							

TABLE 80

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. //	W	514	2	514	2	514	2	514	2	514	2	514	2	514	2	514	5	514	2	514	5
	ILL. W	595	27	612	18	587	35	583	42	587	35	583	62	612	18	566	8	612	18	488	6
	R-1	587	53	587	61	517	53	587	53	587	68	517	53	587	68	551	31	587	53	551	31
	R-2	586	16	536	8	583	42	583	42	587	35	587	53	595	27	488	6	595	40	488	12
	G-1	566	8	566	8	513	21	583	21	566	8	587	18	513	10	572	11	566	8	566	35
	G-2	595	6	595	6	595	27	595	27	595	12	595	27	595	6	551	10	595	27	551	20
	Y-1	566	8	583	42	587	35	587	35	595	27	595	27	587	35	488	6	595	27	488	7
	Y-2	513	42	587	35	595	27	595	27	513	42	595	27	612	18	572	4	612	18	492	9
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. /2	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	566	17	583	42	566	35
	ILL. W	583	42	595	27	587	35	587	35	612	18	612	18	612	18	566	8	595	27	551	20
	R-1	587	35	587	53	587	35	587	35	587	53	587	35	587	53	566	54	587	53	551	43
	R-2	595	27	595	12	583	42	583	42	583	21	587	18	595	27	499	3	595	27	514	9
	G-1	583	10	566	8	583	42	583	42	551	10	583	21	583	21	572	17	566	8	572	47
	G-2	587	35	587	53	587	53	587	35	587	35	587	53	587	53	572	17	587	35	572	32
	Y-1	566	17	587	35	595	27	595	27	587	35	595	27	612	18	566	8	612	18	514	9
	Y-2	583	42	595	27	595	27	587	35	583	42	583	42	583	42	551	5	583	42	514	9
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. /3	W	566	8	566	8	583	42	583	42	566	8	583	21	583	10	566	17	566	8	566	17
	ILL. W	492	12	612	18	595	40	595	40	492	12	612	18	612	18	551	5	595	27	551	5
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	566	35	595	40	566	54
	R-2	586	8	586	4	586	8	586	8	566	8	566	4	586	24	499	3	586	24	499	6
	G-1	583	10	566	8	583	42	587	35	566	17	583	21	566	8	572	17	566	8	575	30
	G-2	595	6	595	6	595	27	595	40	595	6	595	27	595	12	572	17	595	12	572	47
	Y-1	566	8	595	27	595	40	595	40	587	35	595	27	612	28	566	8	612	18	551	5
	Y-2	566	8	455	4	612	28	612	28	492	12	612	28	612	18	566	8	612	28	566	8
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. /4	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	551	5	583	21	551	10
	ILL. W	595	27	612	28	595	40	595	40	612	28	587	53	612	25	566	8	612	28	551	10
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	566	35	595	40	566	54
	R-2	595	27	595	12	587	18	587	35	586	16	586	8	586	16	551	5	586	16	574	9
	G-1	583	10	566	8	587	18	595	12	583	21	587	18	583	10	595	18	583	10	566	54
	G-2	595	27	595	12	595	40	595	40	595	27	595	40	595	27	566	54	595	27	566	54
	Y-1	595	27	612	18	595	27	595	40	587	35	612	28	595	27	551	5	595	27	574	5
	Y-2	583	21	587	18	595	27	595	27	587	35	587	18	587	18	551	5	587	18	574	9
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. /5	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	551	20	583	21	551	20
	ILL. W	587	35	612	18	612	28	295	27	612	18	612	18	612	28	566	17	612	28	574	5
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	54	595	54	551	43
	R-2	586	16	586	8	5610	24	566	17	612	18	595	27	586	16	551	5	586	16	499	6
	G-1	583	21	551	5	583	42	583	21	583	21	583	21	583	10	595	18	583	10	566	54
	G-2	587	35	587	53	587	53	587	53	587	18	587	53	587	53	566	54	587	35	566	54
	Y-1	551	5	612	28	492	12	492	12	595	27	595	40	595	40	566	8	595	40	492	9
	Y-2	583	42	587	35	595	27	595	27	595	27	595	27	595	27	551	5	595	27	499	20

TABLE P/

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16	W	583	10	583	10	583	10	583	42	583	10	583	10	583	10	583	42	583	10	583	42
	ILL. W	612	18	583	21	595	27	595	27	587	18	595	12	587	18	455	8	587	18	587	18
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	30	595	40	595	40
	R-2	455	18	586	17	586	16	586	16	586	17	455	18	455	18	586	8	455	26	586	8
	G-1	587	18	586	17	583	21	587	18	499	6	583	21	586	8	595	18	551	10	583	78
	G-2	586	4	586	4	586	16	586	16	586	4	586	16	586	8	583	42	586	4	583	62
	Y-1	586	8	478	5	586	17	586	24	586	8	586	17	586	17	595	6	586	17	587	8
	Y-2	583	21	586	16	496	15	496	15	466	8	496	15	586	8	583	10	586	8	583	10
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 17	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	575	11	583	10	575	18
	ILL. W	595	12	455	18	595	27	612	18	586	17	586	16	586	16	583	10	586	16	583	21
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	30	595	40	572	32
	R-2	586	8	586	17	586	24	586	17	586	16	586	8	455	8	586	8	478	22	586	8
	G-1	583	10	587	8	587	18	583	21	581	5	586	8	587	8	595	18	551	5	583	62
	G-2	586	4	586	17	586	17	586	17	586	4	586	17	586	8	595	30	586	17	583	48
	Y-1	586	8	586	17	586	31	586	24	586	31	586	17	586	17	551	5	586	17	583	10
	Y-2	496	5	551	5	586	16	586	16	455	4	586	16	586	16	586	8	586	16	583	10
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 18	W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	18
	ILL. W	586	8	455	18	455	18	586	16	586	24	586	16	586	16	586	8	586	16	586	8
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	586	35	595	40	551	31
	R-2	586	17	586	8	586	17	586	17	455	8	455	18	455	26	586	8	455	18	586	8
	G-1	583	21	551	5	583	21	583	21	584	5	551	5	551	5	575	18	551	5	583	42
	G-2	455	4	455	4	455	4	455	4	455	4	455	4	455	1	572	17	455	4	572	32
	Y-1	581	5	612	18	586	17	586	17	612	18	583	42	586	24	551	5	586	24	499	3
	Y-2	586	17	583	21	586	16	586	16	612	18	496	12	586	16	586	8	586	16	586	8
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 19	W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	27	595	6	595	40
	ILL. W	586	16	455	8	455	26	455	18	478	5	478	22	455	18	595	6	455	18	595	54
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	54	595	27	595	54
	R-2	587	18	595	12	586	8	586	8	586	17	455	18	587	18	612	4	587	18	612	18
	G-1	514	5	514	5	551	10	584	2	499	3	551	10	584	5	595	12	551	10	595	54
	G-2	496	3	496	3	496	3	496	3	496	3	496	3	496	3	496	19	496	3	496	26
	Y-1	455	8	586	8	478	22	478	22	551	5	478	22	586	8	595	6	586	8	595	54
	Y-2	586	8	481	6	455	4	586	8	586	4	481	6	586	8	595	54	586	8	595	54
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 20	W	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	27	595	12	595	27
	ILL. W	478	11	455	8	478	22	478	22	481	12	481	24	481	12	595	6	478	11	595	27
	R-1	587	53	587	53	587	35	587	11	587	53	587	53	587	53	586	8	583	62	551	5
	R-2	481	12	478	11	478	22	478	22	586	17	586	17	486	25	486	7	486	13	612	4
	G-1	551	5	551	10	584	2	492	9	499	3	492	3	584	2	583	21	586	8	595	70
	G-2	481	12	481	12	481	12	481	12	481	12	481	12	481	12	587	25	481	12	587	25
	Y-1	586	8	486	8	486	27	486	27	481	6	486	25	586	16	486	13	586	17	595	27
	Y-2	455	8	455	4	481	24	486	25	481	24	481	6	481	6	612	4	481	6	612	18

TABLE f2

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 21	AMB. ILL. W	546	4	546	4	546	4	546	4	546	4
	ILL. W	587	18	455	8	486	25	486	25	595	6
	R-1	587	53	587	53	587	35	587	53	587	53
	R-2	612	9	612	4	478	5	486	25	532	16
	G-1	492	3	488	6	492	9	492	3	514	2
	G-2	575	11	575	11	575	11	575	11	575	11
	Y-1	546	8	551	5	486	13	486	25	546	17
	Y-2	532	9	532	4	481	6	481	24	532	8
Chip		587	67	499	27	5610	31	455	33	492	36
		57	486	37	575	61	551	40	WHITE		
PROJ. PR. NO. 22	AMB. ILL. W	575	30	575	30	575	30	575	30	575	30
	ILL. W	575	48	575	30	546	24	546	24	575	30
	R-1	587	53	587	53	587	53	587	53	587	53
	R-2	455	33	583	42	455	33	455	33	455	33
	G-1	551	5	566	17	486	7	486	7	566	17
	G-2	572	32	572	32	572	17	572	17	572	17
	Y-1	575	48	575	61	546	17	546	31	575	61
	Y-2	546	24	583	42	546	24	583	42	546	24
Chip		587	67	499	27	5610	31	455	33	492	36
		57	486	37	575	61	551	40	WHITE		
PROJ. PR. NO. 23	AMB. ILL. W	583	21	583	21	583	21	583	21	583	21
	ILL. W	583	42	587	35	551	5	551	10	587	35
	R-1	595	40	595	40	595	40	595	40	595	40
	R-2	583	42	587	35	583	62	455	18	566	17
	G-1	551	5	583	21	551	5	551	10	492	9
	G-2	583	10	583	42	583	21	566	17	583	21
	Y-1	566	8	583	62	566	8	566	8	583	42
	Y-2	546	24	583	21	546	24	583	21	546	24
Chip		587	67	499	27	5610	31	455	33	492	36
		57	486	37	575	61	551	40	WHITE		
PROJ. PR. NO. 24	AMB. ILL. W	583	21	583	21	583	21	583	21	583	21
	ILL. W	587	35	595	40	575	30	575	30	575	30
	R-1	587	53	587	53	587	53	587	53	587	53
	R-2	478	15	532	16	551	10	551	10	532	16
	G-1	583	10	583	21	551	10	574	5	566	17
	G-2	583	10	583	42	583	10	566	17	583	21
	Y-1	583	42	587	35	583	42	583	42	583	42
	Y-2	546	24	587	35	583	42	583	21	583	42
Chip		587	67	499	27	5610	31	455	33	492	36
		57	486	37	575	61	551	40	WHITE		
PROJ. PR. NO. 25	AMB. ILL. W	572	11	572	11	572	11	572	11	572	11
	ILL. W	583	42	587	35	587	18	583	42	587	35
	R-1	587	53	587	53	587	53	587	53	587	53
	R-2	612	18	478	12	575	27	566	8	575	27
	G-1	577	8	583	10	575	12	583	21	577	8
	G-2	478	5	478	5	478	5	478	5	478	5
	Y-1	583	21	583	42	583	42	583	42	583	42
	Y-2	546	24	587	35	583	42	583	21	583	42
Chip		587	67	499	27	5610	31	455	33	492	36
		57	486	37	575	61	551	40	WHITE		

TABLE 23

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 26	W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	12	595	6	595	12
	W	498	15	566	17	455	18	538	24	538	16	498	15	498	15	538	4	538	16	595	12
	R-1	583	21	583	21	583	21	583	21	583	21	583	21	583	21	566	8	583	21	566	8
	R-2	455	18	612	18	612	28	612	18	498	12	498	19	612	18	566	8	612	18	486	7
	G-1	551	5	514	5	583	21	583	21	583	21	583	10	551	5	595	18	551	10	587	53
	G-2	587	18	587	8	587	35	587	18	587	18	587	18	587	18	587	53	587	8	595	54
	Y-1	566	8	455	18	566	24	566	31	551	5	566	24	566	17	486	7	566	17	612	4
	Y-2	566	8	551	5	538	16	538	24	551	5	538	16	538	16	566	8	538	8	595	27
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	RESPONSES																				
PROJ. PR. No. 27	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	W	612	9	498	6	498	12	412	18	498	15	538	24	538	16	595	6	538	24	595	6
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	566	8	587	53	566	8
	R-2	595	40	612	18	612	18	612	18	595	27	595	12	612	28	566	17	612	28	486	6
	G-1	566	8	551	10	583	21	583	21	514	2	583	10	566	8	583	21	566	8	595	40
	G-2	583	10	583	10	583	42	583	42	583	10	583	42	583	21	583	62	583	21	583	62
	Y-1	566	8	612	18	583	42	498	12	583	42	566	17	566	31	486	6	566	24	486	6
	Y-2	566	8	551	5	538	8	538	16	566	8	538	16	538	8	595	6	538	8	595	6
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	RESPONSES																				
PROJ. PR. No. 28	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	W	612	9	498	6	498	12	412	18	498	15	538	24	538	16	595	6	538	24	595	6
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	566	8	587	53	566	8
	R-2	595	40	612	18	612	18	612	18	595	27	595	12	612	28	566	17	612	28	486	6
	G-1	566	8	551	10	583	21	583	21	514	2	583	10	566	8	583	21	566	8	595	40
	G-2	583	10	583	10	583	42	583	42	583	10	583	42	583	21	583	62	583	21	583	62
	Y-1	566	8	612	18	583	42	498	12	583	42	566	17	566	31	486	6	566	24	486	6
	Y-2	566	8	551	5	538	8	538	16	566	8	538	16	538	8	595	6	538	8	595	6
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	RESPONSES																				
PROJ. PR. No. 29	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	W	612	9	498	6	498	12	412	18	498	15	538	24	538	16	595	6	538	24	595	6
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	566	8	587	53	566	8
	R-2	595	40	612	18	612	18	612	18	595	27	595	12	612	28	566	17	612	28	486	6
	G-1	566	8	551	10	583	21	583	21	514	2	583	10	566	8	583	21	566	8	595	40
	G-2	583	10	583	10	583	42	583	42	583	10	583	42	583	21	583	62	583	21	583	62
	Y-1	566	8	612	18	583	42	498	12	583	42	566	17	566	31	486	6	566	24	486	6
	Y-2	566	8	551	5	538	8	538	16	566	8	538	16	538	8	595	6	538	8	595	6
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	RESPONSES																				
PROJ. PR. No. 30	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	W	612	9	498	6	498	12	412	18	498	15	538	24	538	16	595	6	538	24	595	6
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	566	8	587	53	566	8
	R-2	595	40	612	18	612	18	612	18	595	27	595	12	612	28	566	17	612	28	486	6
	G-1	566	8	551	10	583	21	583	21	514	2	583	10	566	8	583	21	566	8	595	40
	G-2	583	10	583	10	583	42	583	42	583	10	583	42	583	21	583	62	583	21	583	62
	Y-1	566	8	612	18	583	42	498	12	583	42	566	17	566	31	486	6	566	24	486	6
	Y-2	566	8	551	5	538	8	538	16	566	8	538	16	538	8	595	6	538	8	595	6
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	RESPONSES																				

TABLE 84

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 1	W	575	30	575	48	575	30	575	30	575	48	575	30	575	48	455	33	575	48	455	33
	ILL. W	575	32	575	61	575	47	575	47	575	61	575	32	575	60	455	26	575	60	455	26
	R-1	575	53	575	53	575	53	575	53	575	53	575	53	575	53	455	18	575	53	455	18
	R-2	575	17	575	61	575	24	575	18	575	61	575	17	575	48	455	8	575	48	455	40
	G-1	575	18	575	17	575	11	575	32	575	32	575	17	575	47	455	13	575	32	455	36
	G-2	575	48	575	61	575	30	575	30	575	48	575	30	575	18	455	18	575	48	455	33
	Y-1	575	48	575	61	575	30	575	48	575	61	575	30	575	61	455	31	575	61	455	33
	Y-2	575	48	575	61	575	30	575	48	575	61	575	30	575	61	455	6	575	61	455	36
Chip		307	67	499	27	3616	31	499	33	499	36	612	37	406	37	575	61	351	40	WHITE	
PROJ. PR. NO. 2	W	575	48	575	48	575	30	575	30	575	48	575	30	575	48	455	26	575	48	455	33
	ILL. W	575	32	575	30	575	47	575	47	575	60	575	32	575	60	455	18	575	60	455	26
	R-1	575	40	575	54	575	27	575	27	575	40	575	40	575	37	455	36	575	37	455	36
	R-2	575	18	575	48	575	30	575	30	575	60	575	18	575	48	455	33	575	48	455	36
	G-1	575	18	575	32	575	32	575	17	575	47	575	18	575	35	455	11	575	32	455	24
	G-2	575	48	575	61	575	30	575	48	575	60	575	48	575	48	455	18	575	48	455	17
	Y-1	575	30	575	61	575	48	575	61	575	61	575	30	575	61	455	17	575	61	455	33
	Y-2	575	30	575	61	575	48	575	48	575	61	575	30	575	61	455	8	575	61	455	33
Chip		307	67	499	27	3616	31	499	33	499	36	612	37	406	37	575	61	351	40	WHITE	
PROJ. PR. NO. 3	W	575	18	575	30	575	30	575	30	575	18	575	30	575	30	455	31	575	18	575	31
	ILL. W	575	30	575	61	575	48	575	48	575	30	575	30	575	45	455	8	575	60	455	24
	R-1	575	40	575	54	575	40	575	27	575	40	575	27	575	40	455	33	575	54	455	33
	R-2	575	18	575	62	575	42	575	48	575	30	575	18	575	48	455	4	575	48	455	33
	G-1	575	5	575	54	575	32	575	32	575	35	575	6	575	35	455	11	575	35	455	32
	G-2	575	32	575	17	575	17	575	32	575	32	575	32	575	17	455	8	575	17	455	24
	Y-1	575	30	575	61	575	48	575	48	575	61	575	30	575	61	455	17	575	61	455	31
	Y-2	575	30	575	61	575	48	575	48	575	61	575	30	575	61	455	8	575	61	455	31
Chip		307	67	499	27	3616	31	499	33	499	36	612	37	406	37	575	61	351	40	WHITE	
PROJ. PR. NO. 4	W	575	17	575	17	575	17	575	32	575	17	575	17	575	17	575	31	575	32	575	31
	ILL. W	575	40	575	47	575	60	575	47	575	47	575	17	575	47	455	40	575	47	455	48
	R-1	575	53	575	53	575	35	575	35	575	53	575	53	575	53	455	30	575	53	455	30
	R-2	575	18	575	40	575	27	575	27	575	30	575	30	575	27	455	4	575	40	455	40
	G-1	575	2	575	35	575	17	575	32	575	35	575	2	575	35	455	8	575	35	455	26
	G-2	575	47	575	47	575	32	575	60	575	47	575	47	575	47	455	17	575	47	455	32
	Y-1	575	30	575	60	575	32	575	47	575	60	575	32	575	60	455	32	575	60	455	32
	Y-2	575	48	575	61	575	30	575	48	575	61	575	48	575	61	455	31	575	61	455	31
Chip		307	67	499	27	3616	31	499	33	499	36	612	37	406	37	575	61	351	40	WHITE	
PROJ. PR. NO. 5	W	575	32	575	32	575	47	575	47	575	32	575	32	575	32	575	31	575	31	575	31
	ILL. W	575	30	575	40	575	30	575	47	575	60	575	30	575	60	455	40	575	60	455	48
	R-1	575	35	575	54	575	35	575	35	575	35	575	35	575	35	455	22	575	54	455	22
	R-2	575	26	575	62	575	42	575	42	575	60	575	30	575	62	455	4	575	42	455	48
	G-1	575	10	575	32	575	17	575	17	575	32	575	10	575	35	455	3	575	32	455	31
	G-2	575	47	575	60	575	32	575	47	575	60	575	32	575	60	455	32	575	47	455	32
	Y-1	575	30	575	60	575	47	575	47	575	60	575	32	575	60	455	31	575	60	455	31
	Y-2	575	30	575	61	575	48	575	61	575	61	575	30	575	61	455	4	575	61	455	31

TABLE 86

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. NO. 6	W	575 18	575 30	575 30	575 30	575 30	575 18	575 30	575 24	575 30	575 24
	ILL. W	575 32	575 47	575 32	575 47	575 60	575 32	575 47	575 17	575 60	575 31
	R-1	575 35	575 54	575 35	575 54	575 54	575 35	575 54	575 24	575 54	575 24
	R-2	575 48	575 60	575 47	575 47	575 60	575 48	575 27	575 4	575 48	575 33
	G-1	575 10	575 35	575 17	575 32	575 35	575 11	575 35	575 11	575 35	575 31
	G-2	575 47	575 47	575 47	575 60	575 60	575 37	575 47	575 24	575 60	575 31
	Y-1	575 48	575 61	575 48	575 48	575 61	575 30	575 61	575 17	575 61	575 31
	Y-2	575 48	575 61	575 48	575 48	575 61	575 48	575 61	575 31	575 61	575 31
Chip		507 67	499 27	5610 31	493 33	492 36	612 37	406 37	575 61	551 40	WHITE
PROJ. PR. NO. 7	W	575 42	575 42	575 42	575 42	575 42	575 42	575 42	575 20	575 42	575 31
	ILL. W	575 27	575 40	575 35	575 35	575 27	575 35	575 27	575 9	575 40	575 23
	R-1	575 54	575 40	575 40	575 40	575 54	575 40	575 40	575 15	575 40	575 15
	R-2	575 17	575 40	575 35	575 35	575 17	575 35	575 40	575 3	575 40	575 40
	G-1	575 10	575 12	575 11	575 10	575 12	575 10	575 12	575 6	575 11	575 43
	G-2	575 35	575 53	575 35	575 35	575 68	575 35	575 53	575 5	575 53	575 15
	Y-1	575 8	575 40	575 8	575 42	575 40	575 8	575 54	575 18	575 54	575 26
	Y-2	575 42	575 40	575 42	575 42	575 40	575 42	575 27	575 20	575 42	575 20
Chip		507 67	499 27	5610 31	493 33	492 36	612 37	406 37	575 61	551 40	WHITE
PROJ. PR. NO. 8	W	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 9	575 35	575 9
	ILL. W	575 16	575 28	575 27	575 27	575 16	575 28	575 25	575 8	575 28	575 13
	R-1	575 27	575 54	575 40	575 27	575 54	575 27	575 54	575 31	575 54	575 43
	R-2	575 42	575 21	575 17	575 8	575 28	575 17	575 40	575 3	575 40	575 18
	G-1	575 10	575 18	575 11	575 25	575 12	575 10	575 8	575 19	575 11	575 54
	G-2	575 12	575 40	575 12	575 12	575 27	575 12	575 12	575 5	575 27	575 20
	Y-1	575 42	575 53	575 40	575 40	575 53	575 42	575 53	575 13	575 53	575 24
	Y-2	575 42	575 27	575 35	575 27	575 42	575 35	575 12	575 3	575 42	575 20
Chip		507 67	499 27	5610 31	493 33	492 36	612 37	406 37	575 61	551 40	WHITE
PROJ. PR. NO. 9	W	575 17	575 17	575 17	575 17	575 17	575 17	575 17	575 8	575 17	575 8
	ILL. W	575 17	575 27	575 42	575 35	575 18	575 10	575 27	575 3	575 27	575 9
	R-1	575 27	575 40	575 27	575 27	575 40	575 27	575 27	575 31	575 40	575 31
	R-2	575 54	575 18	575 27	575 27	575 54	575 42	575 27	575 6	575 27	575 23
	G-1	575 6	575 10	575 12	575 21	575 8	575 10	575 10	575 9	575 18	575 31
	G-2	575 8	575 8	575 8	575 25	575 8	575 11	575 54	575 13	575 17	575 13
	Y-1	575 21	575 35	575 27	575 18	575 35	575 21	575 35	575 13	575 35	575 25
	Y-2	575 21	575 27	575 35	575 27	575 27	575 21	575 27	575 6	575 27	575 23
Chip		507 67	499 27	5610 31	493 33	492 36	612 37	406 37	575 61	551 40	WHITE
PROJ. PR. NO. 10	W	575 35	575 35	575 35	575 35	575 35	575 35	575 35	575 13	575 35	575 13
	ILL. W	575 35	575 27	575 42	575 35	575 40	575 42	575 53	575 6	575 27	575 25
	R-1	575 46	575 54	575 40	575 40	575 54	575 40	575 40	575 9	575 54	575 9
	R-2	575 27	575 40	575 27	575 27	575 42	575 27	575 40	575 6	575 27	575 23
	G-1	575 6	575 10	575 12	575 12	575 12	575 10	575 18	575 6	575 12	575 5
	G-2	575 17	575 35	575 8	575 25	575 25	575 11	575 35	575 17	575 17	575 27
	Y-1	575 18	575 35	575 27	575 18	575 35	575 18	575 35	575 9	575 35	575 23
	Y-2	575 25	575 40	575 35	575 27	575 40	575 42	575 27	575 4	575 27	575 24

TABLE 86

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 11	AMB. ILL. W	582	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35
	R-1	585	27	612	18	587	35	587	35	612	18	587	35	587	35	587	35	587	35	587	35
	R-2	585	27	585	54	585	40	585	40	585	54	585	40	585	54	585	40	585	54	585	40
	G-1	586	8	585	40	587	35	587	35	585	40	585	27	585	27	585	27	585	27	585	27
	G-2	587	8	585	12	612	18	612	18	587	18	587	8	587	18	587	8	587	18	587	8
	Y-1	587	18	587	35	587	18	587	18	587	35	587	18	587	35	587	18	587	35	587	18
	Y-2	586	8	587	35	586	8	585	12	587	35	612	18	583	42	583	42	583	42	583	42
	Chip	583	42	585	40	583	42	587	35	585	27	587	35	585	27	586	8	585	27	583	42
PROJ. PR. No. 12	AMB. ILL. W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35
	R-1	585	27	587	35	583	62	587	35	612	25	587	35	612	25	587	35	587	35	587	35
	R-2	587	53	585	54	587	35	587	35	585	54	587	35	585	54	587	35	585	54	587	35
	G-1	586	17	585	27	586	17	586	17	612	27	586	32	585	40	586	8	585	40	586	8
	G-2	586	8	587	8	585	12	585	27	587	18	586	17	583	21	587	20	586	21	586	54
	Y-1	585	12	585	40	585	12	585	27	585	40	585	12	585	40	586	17	585	27	586	54
	Y-2	583	42	612	28	587	35	585	27	612	27	586	8	583	42	586	8	583	42	586	8
	Chip	587	18	612	28	587	35	587	18	612	28	586	17	612	28	587	9	612	28	587	40
PROJ. PR. No. 13	AMB. ILL. W	587	18	587	35	583	42	587	35	583	42	587	35	586	17	587	35	586	17	587	35
	R-1	587	35	612	28	587	35	585	40	612	28	583	62	612	28	587	35	612	28	587	35
	R-2	585	40	585	54	585	40	585	40	585	54	585	40	585	54	586	35	585	54	587	35
	G-1	586	8	585	40	586	17	586	17	612	27	586	32	612	27	586	8	612	27	586	8
	G-2	586	8	583	21	587	18	587	35	587	18	586	17	583	21	586	35	583	21	586	54
	Y-1	585	12	585	27	585	12	587	35	585	54	585	12	585	40	586	17	585	27	586	54
	Y-2	586	8	612	28	587	35	585	27	612	28	586	8	612	27	587	6	612	27	587	9
	Chip	587	35	612	28	587	35	586	26	585	27	586	17	612	28	586	8	612	28	587	18
PROJ. PR. No. 14	AMB. ILL. W	587	53	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35
	R-1	586	12	585	40	492	12	492	19	585	40	583	62	612	28	587	35	612	28	587	35
	R-2	585	40	585	54	585	40	585	40	585	54	585	40	585	54	586	35	585	54	587	35
	G-1	585	27	612	28	612	18	612	18	612	37	586	35	612	37	587	5	612	37	587	35
	G-2	586	8	587	18	587	8	583	10	585	12	586	8	587	18	587	20	587	18	586	54
	Y-1	612	9	612	28	612	9	612	9	612	28	612	9	612	28	587	20	612	28	587	48
	Y-2	586	8	585	40	612	18	585	27	585	54	586	8	585	40	587	5	585	40	587	9
	Chip	583	42	612	28	585	40	585	40	612	28	586	17	612	28	586	8	612	28	587	20
PROJ. PR. No. 15	AMB. ILL. W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35
	R-1	585	27	586	12	587	35	585	40	612	28	583	62	492	19	586	17	492	19	586	15
	R-2	585	40	585	54	585	40	585	40	585	54	585	40	585	54	586	35	585	54	587	35
	G-1	586	17	583	21	583	21	585	12	585	12	587	10	583	21	587	10	587	18	586	54
	G-2	587	18	587	18	587	18	587	35	587	18	587	18	587	35	587	20	587	35	587	21
	Y-1	585	27	585	54	585	27	612	18	612	27	586	8	612	27	587	5	612	27	587	20
	Y-2	587	35	585	40	583	42	587	35	585	40	587	10	612	28	492	3	612	28	587	20
	Chip	587	35	585	40	583	42	587	35	585	40	587	10	612	28	492	3	612	28	587	20

TABLE P7

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 16	W	583	10	583	21	583	42	583	42	583	21	583	10	583	40	575	18	583	10	575	30
	ILL.	583	17	583	4	583	17	583	17	583	17	583	24	583	24	583	24	583	24	583	62
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	572	17	595	54	572	47
	R-2	595	12	595	6	595	27	595	12	595	6	455	8	493	12	586	8	493	12	586	17
	G-1	583	21	595	6	583	21	583	21	499	3	583	42	492	3	583	42	499	3	583	78
	G-2	586	4	586	4	586	4	586	4	586	4	586	4	586	4	575	48	586	4	575	61
	Y-1	583	21	587	18	586	17	586	24	586	16	586	17	586	16	499	3	586	16	587	8
	Y-2	496	5	536	46	496	15	496	15	496	16	566	8	586	16	572	17	586	16	575	48
Chip		587	67	499	27	586	31	495	33	492	36	612	37	486	37	575	61	531	40	WHITE	
PROJ. PR. No. 17	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	92
	ILL.	586	31	455	4	586	31	586	31	586	17	586	31	586	31	583	10	586	24	586	8
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	575	48	595	54	575	47
	R-2	586	17	492	19	586	17	586	17	612	9	586	17	586	24	586	8	586	24	586	17
	G-1	583	10	595	6	612	9	612	9	551	5	583	21	499	3	575	30	514	2	583	78
	G-2	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	20
	Y-1	587	6	583	10	612	18	612	18	587	18	586	8	496	16	586	8	496	16	586	17
	Y-2	583	21	587	36	496	15	496	15	586	16	583	42	496	15	572	17	496	15	572	47
Chip		587	67	499	27	586	31	495	33	492	36	612	37	486	37	575	61	531	40	WHITE	
PROJ. PR. No. 18	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17
	ILL.	586	31	586	31	586	31	586	31	586	17	586	31	586	31	586	8	586	31	586	8
	R-1	595	27	595	54	595	27	595	27	595	54	595	27	595	54	586	17	595	54	586	54
	R-2	586	8	586	17	586	24	586	24	586	24	586	17	586	17	586	8	586	17	586	5
	G-1	583	10	514	2	583	10	583	10	514	2	583	21	481	6	575	30	481	6	583	78
	G-2	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	32	572	17	572	77
	Y-1	586	8	612	18	586	17	586	17	612	18	586	17	612	18	581	5	612	18	586	8
	Y-2	496	5	496	15	586	16	586	16	586	24	496	15	496	15	572	17	496	15	586	8
Chip		587	67	499	27	586	31	495	33	492	36	612	37	486	37	575	61	531	40	WHITE	
PROJ. PR. No. 19	W	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	54
	ILL.	586	16	black	black	586	17	586	17	black	black	586	16	586	16	586	16	586	16	586	37
	R-1	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	54	595	12	595	54
	R-2	586	17	586	8	586	17	586	17	black	black	586	17	586	17	586	8	586	17	586	50
	G-1	583	10	514	5	575	18	586	17	499	3	583	21	551	5	595	12	514	2	583	78
	G-2	499	3	514	5	514	2	551	10	514	2	514	2	551	10	587	53	587	53	587	68
	Y-1	485	8	black	black	455	26	455	26	black	black	455	26	black	black	595	27	black	black	595	54
	Y-2	586	24	586	8	455	18	455	26	586	8	455	18	586	8	595	54	586	8	595	54
Chip		587	67	499	27	586	31	495	33	492	36	612	37	486	37	575	61	531	40	WHITE	
PROJ. PR. No. 20	W	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	27
	ILL.	455	18	612	18	455	18	455	18	black	black	455	18	455	18	455	18	455	18	455	40
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	12	595	27	595	30
	R-2	455	4	455	17	455	24	455	33	586	17	586	17	586	17	586	17	586	17	586	4
	G-1	612	2	551	10	583	10	551	5	514	5	578	18	571	2	612	18	551	10	583	78
	G-2	586	17	586	8	586	35	586	35	586	17	586	8	586	17	586	40	586	17	586	54
	Y-1	481	12	black	black	455	26	481	12	black	black	455	26	586	8	595	27	black	black	595	27
	Y-2	586	8	455	4	455	18	455	18	455	4	455	18	455	4	595	40	455	4	595	40

TABLE 89

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 26	AMB. ILL. W	566	4	566	4	566	4	583	42	566	4	566	4	566	4	566	17	566	4	566	17
	R-1	583	21	587	18	566	24	566	31	587	18	566	24	587	18	481	6	587	18	585	6
	R-2	585	40	585	54	585	40	585	40	585	54	585	40	585	54	56	8	585	54	566	8
	G-1	492	22	612	37	492	15	492	15	612	27	566	35	612	27	514	5	612	27	514	5
	G-2	583	10	566	8	583	10	587	18	514	2	583	10	581	5	575	18	581	5		
	Y-1	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	42	583	21	583	62
	Y-2	566	8	583	42	583	21	585	27	587	35	481	12	583	42	486	7	583	21	486	7
	Chip	587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 27	AMB. ILL. W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	R-1	583	21	587	18	583	21	612	18	587	18	566	24	587	18	566	4	587	18	587	5
	R-2	585	40	585	54	585	40	585	40	585	54	585	40	585	54	551	5	585	54	587	5
	G-1	566	24	612	27	566	17	612	27	585	54	551	20	612	27	551	5	612	27	551	5
	G-2	514	2	551	5	585	18	583	10	514	2	583	21	514	2	583	21	587	10		
	Y-1	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	30
	Y-2	583	21	583	42	587	18	612	18	583	42	566	16	583	42	486	7	583	42	486	3
	Chip	551	5	583	42	587	35	587	35	583	42	455	8	583	42	486	7	583	42	455	4
PROJ. PR. No. 28	AMB. ILL. W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	R-1	583	21	587	18	583	21	612	18	587	18	566	24	587	18	566	4	587	18	587	5
	R-2	585	40	585	54	585	40	585	40	585	54	585	40	585	54	551	5	585	54	587	5
	G-1	566	24	612	27	566	17	612	27	585	54	551	20	612	27	551	5	612	27	551	5
	G-2	514	2	551	5	585	18	583	10	514	2	583	21	514	2	583	21	587	10		
	Y-1	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	30
	Y-2	583	21	583	42	587	18	612	18	583	42	566	16	583	42	486	7	583	42	486	3
	Chip	551	5	583	42	587	35	587	35	583	42	455	8	583	42	486	7	583	42	455	4
PROJ. PR. No. 29	AMB. ILL. W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	R-1	583	21	587	18	583	21	612	18	587	18	566	24	587	18	566	4	587	18	587	5
	R-2	585	40	585	54	585	40	585	40	585	54	585	40	585	54	551	5	585	54	587	5
	G-1	566	24	612	27	566	17	612	27	585	54	551	20	612	27	551	5	612	27	551	5
	G-2	514	2	551	5	585	18	583	10	514	2	583	21	514	2	583	21	587	10		
	Y-1	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	30
	Y-2	583	21	583	42	587	18	612	18	583	42	566	16	583	42	486	7	583	42	486	3
	Chip	551	5	583	42	587	35	587	35	583	42	455	8	583	42	486	7	583	42	455	4
PROJ. PR. No. 30	AMB. ILL. W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	R-1	583	21	587	18	583	21	612	18	587	18	566	24	587	18	566	4	587	18	587	5
	R-2	585	40	585	54	585	40	585	40	585	54	585	40	585	54	551	5	585	54	587	5
	G-1	566	24	612	27	566	17	612	27	585	54	551	20	612	27	551	5	612	27	551	5
	G-2	514	2	551	5	585	18	583	10	514	2	583	21	514	2	583	21	587	10		
	Y-1	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	30
	Y-2	583	21	583	42	587	18	612	18	583	42	566	16	583	42	486	7	583	42	486	3
	Chip	551	5	583	42	587	35	587	35	583	42	455	8	583	42	486	7	583	42	455	4

TABLE 88

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

		1	2	3	4	5	6	7	8	9	back
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 21	W	561c	4	581c	4	561c	4	581c	4	561c	4
	ILL. W	561c	4	581c	4	561c	4	581c	4	561c	4
	R-1	587	35	587	18	587	18	587	18	587	18
	R-2	455	18	455	18	455	18	455	18	455	18
	G-1	551	5	551	10	551	5	551	10	551	5
	G-2	551	5	551	5	551	5	551	5	551	5
	Y-1	581c	8	455	4	481	24	481	12	581c	17
	Y-2	581c	17	455	4	481	13	455	4	481	13
Chip		587	67	499	27	561c	31	455	33	492	36
		612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 22	W	572	47	572	47	572	47	572	47	572	47
	ILL. W	572	47	572	47	572	47	572	47	572	47
	R-1	575	30	575	40	575	40	575	40	575	40
	R-2	575	40	575	40	575	40	575	40	575	40
	G-1	575	42	575	8	575	16	575	24	575	10
	G-2	575	42	575	8	575	16	575	24	575	10
	Y-1	575	30	575	61	575	24	575	61	575	24
	Y-2	575	42	575	35	575	24	575	35	575	24
Chip		587	67	499	27	561c	31	455	33	492	36
		612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 23	W	499	3	499	3	499	3	499	3	499	3
	ILL. W	499	3	499	3	499	3	499	3	499	3
	R-1	583	42	583	35	583	10	583	10	583	10
	R-2	583	42	583	35	583	10	583	10	583	10
	G-1	583	42	583	35	583	10	583	10	583	10
	G-2	583	42	583	35	583	10	583	10	583	10
	Y-1	583	42	583	35	583	10	583	10	583	10
	Y-2	583	42	583	35	583	10	583	10	583	10
Chip		587	67	499	27	561c	31	455	33	492	36
		612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 24	W	583	21	583	21	583	21	583	21	583	21
	ILL. W	583	21	583	21	583	21	583	21	583	21
	R-1	583	21	583	21	583	21	583	21	583	21
	R-2	583	21	583	21	583	21	583	21	583	21
	G-1	583	21	583	21	583	21	583	21	583	21
	G-2	583	21	583	21	583	21	583	21	583	21
	Y-1	583	21	583	21	583	21	583	21	583	21
	Y-2	583	21	583	21	583	21	583	21	583	21
Chip		587	67	499	27	561c	31	455	33	492	36
		612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 25	W	583	21	583	21	583	21	583	21	583	21
	ILL. W	583	21	583	21	583	21	583	21	583	21
	R-1	583	21	583	21	583	21	583	21	583	21
	R-2	583	21	583	21	583	21	583	21	583	21
	G-1	583	21	583	21	583	21	583	21	583	21
	G-2	583	21	583	21	583	21	583	21	583	21
	Y-1	583	21	583	21	583	21	583	21	583	21
	Y-2	583	21	583	21	583	21	583	21	583	21
Chip		587	67	499	27	561c	31	455	33	492	36
		612	37	486	37	575	61	551	40	WHITE	

APPENDIX D

PROCEDURE FOR DETERMINATION OF PHYSICAL STIMULI
PRODUCING RESPONSES IN TABLES 14 AND 15

For exact specification of stimuli required to produce the responses listed in Tables 14 and 15 the following procedure should be followed.

First, determine the pair of projection filters producing the responses from Table 14 or 15. Then, refer to the raw data in Appendix C under the projection conditions of interest to determine which chip (s) on which slide combinations result in the various responses. Finally, determine the densities of these chips on the slides in question from Table 2 (Broad Band) or Table 6 (Narrow Band). Thus any pair of slides having the same density combinations and projected through the same filters should produce the responses reported in Tables 14 and 15.

For example, Table 14, projection pair 1 produces responses of green, blue and yellow. Appendix C 1 reveals that:

- 1) green (551m μ) is the modal response to chip no. 1 with slide combination no. 1.
- 2) blue (455m μ) is the modal response to chip no. 3 with slide combination no. 1.
- 3) yellow (575m μ) is the modal response to chip no. 2 with slide combination no. 1.

It will be noted that these three responses are also produced by other chips and/or other slide combinations, however, for illustration only the three listed above will be considered.

Table 2 shows that for slide combination no. 1 (452.7m μ and 552.5m μ photographic filters) the three chips have the following densities:

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	Density Slide 1	Density Slide 2
Chip 1 (551mμ GY)	1.96	1.13
Chip 2 (575mμ Y)	1.61	0.66
Chip 3 (486mμ B)	1.25	1.12
Background	0.79	0.58

Thus a pair of slides prepared having these densities and projected through the two filters used here will produce the three reported colors.