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14. ABSTRACT This symposium brought together an international assemblage of eleven leading surface scientists to discuss current topics in surface science and catalysis, and reflect on the impact of the career of Professor John T. Yates, Jr., a pioneer of modern surface chemistry and physics who died on September 26, 2015, on our modern understanding of surface chemistry and physics. <i>John was a brilliant mentor, impacting students, postdoctoral associates, and the scientific community. His</i>					
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Report Title

Final Report: AVS Retrospective Symposium, on the Surface Science of Professor John T. Yates, Jr.

ABSTRACT

This symposium brought together an international assemblage of eleven leading surface scientists to discuss current topics in surface science and catalysis, and reflect on the impact of the career of Professor John T. Yates, Jr., a pioneer of modern surface chemistry and physics who died on September 26, 2015, on our modern understanding of surface chemistry and physics.

John was a brilliant mentor, impacting students, postdoctoral associates, and the scientific community. His excitement about science, the wonders of scientific discovery, and love of learning inspired and encouraged many to pursue scientific careers. John had continual funding from the Army Research Office for more than 30 years. He was unfailingly responsive to Army requests: he sent his students to work in Army laboratories; Army scientists frequented his university lab; and he participated in many Army meetings and workshops. John's passion for science and curiosity resulted in the development of invaluable surface science techniques to decipher the most complex phenomena. His basic research contributions have made significant impacts on Army programs, in particular, new sorbent material chemistry and validation.

The symposium covered his research interests in the structure and spectroscopy of surface species, the dynamics of surface processes, and the development of new methods for research in surface chemistry. His broad range of accomplishments resulted in long-standing contributions to the Army, DoD, and the field of surface science. The all-invited symposium comprised of an international line-up of leading researchers in surface science, who were former students, postdocs and colleagues of Yates.

The special afternoon session honoring Yates was held 10 November 2016 in Nashville TN during the AVS (American Vacuum Society) International Symposium and Exhibition. The AVS Symposium was the perfect setting for this symposium since it is the premier international assembly of surface scientists engaged in research focused on the science and technology of materials, interfaces and processing. The AVS provided an opportunity for a retrospective of Yates contributions to a broad cross-section of the international surface science community, but more importantly provided an opportunity to inspire a new generation of scientists about research on surface chemistry and physics.

The symposium highlighted basic research efforts in understanding interfacial activity as well as dynamic nanostructured and self-assembled chemical systems. Fundamentals of adsorption, desorption, transport and catalytic chemical transformation were discussed. Novel (nano) materials and approaches to making measurements of dynamic surface and interfacial systems were reported. These areas are of central importance to the Army for developing a sound scientific basis for providing hazardous materials management capabilities and soldier survivability.

Enter List of papers submitted or published that acknowledge ARO support from the start of the project to the date of this printing. List the papers, including journal references, in the following categories:

(a) Papers published in peer-reviewed journals (N/A for none)

Received

Paper

TOTAL:

Number of Papers published in peer-reviewed journals:

(b) Papers published in non-peer-reviewed journals (N/A for none)

Received Paper

TOTAL:

Number of Papers published in non peer-reviewed journals:

(c) Presentations

Number of Presentations: 0.00

Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Peer-Reviewed Conference Proceeding publications (other than abstracts):

(d) Manuscripts

Received Paper

TOTAL:

Number of Manuscripts:

Books

Received Book

TOTAL:

Received Book Chapter

TOTAL:

Patents Submitted

Patents Awarded

Awards

Graduate Students

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Post Doctorates

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Faculty Supported

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Under Graduate students supported

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Student Metrics

This section only applies to graduating undergraduates supported by this agreement in this reporting period

The number of undergraduates funded by this agreement who graduated during this period: 0.00

The number of undergraduates funded by this agreement who graduated during this period with a degree in science, mathematics, engineering, or technology fields:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will continue to pursue a graduate or Ph.D. degree in science, mathematics, engineering, or technology fields:..... 0.00

Number of graduating undergraduates who achieved a 3.5 GPA to 4.0 (4.0 max scale):..... 0.00

Number of graduating undergraduates funded by a DoD funded Center of Excellence grant for Education, Research and Engineering:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and intend to work for the Department of Defense 0.00

The number of undergraduates funded by your agreement who graduated during this period and will receive scholarships or fellowships for further studies in science, mathematics, engineering or technology fields:..... 0.00

Names of Personnel receiving masters degrees

<u>NAME</u>
Total Number:

Names of personnel receiving PhDs

NAME

Total Number:

Names of other research staff

NAME

PERCENT SUPPORTED

FTE Equivalent:

Total Number:

Sub Contractors (DD882)

Inventions (DD882)

Scientific Progress

Technology Transfer

A Retrospective Symposium on the Surface Science of Prof. John T. Yates, Jr.

Final Report to the Army Research Office

By

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A Retrospective Symposium on the Surface Science of Prof. John T. Yates, Jr.

This symposium brought together an international assemblage of eleven leading surface scientists to discuss current topics in surface science and catalysis, and reflect on the impact of the career of Professor John T. Yates, Jr., a pioneer of modern surface chemistry and physics who died on September 26, 2015, on our modern understanding of surface chemistry and physics.

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The symposium covered his research interests in the structure and spectroscopy of surface species, the dynamics of surface processes, and the development of new methods for research in surface chemistry. His broad range of accomplishments resulted in long-standing contributions to the Army, DoD, and the field of surface science. The all-invited symposium comprised of an international line-up of leading researchers in surface science, who were former students, postdocs and colleagues of Yates.

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A. Names of the session chairperson(s):

- a. Dr. John N. Russell, Jr., Head – Surface Chemistry Branch, Code 6170, US Naval Research Laboratory, 4555 Overlook Ave SW, Washington DC 20375
- b. Dr. Vincent Smentkowski, Surface Scientist/Engineer, GE Global Research Center, 1 Research Circle, Building K1 1d41, Niskayuna, NY 12309

B. List of speakers:

- J. William Gadzuk, retired (NIST).
- David Hercules, Vanderbilt University
- Ellen Williams, ARPA-E
- Patricia A. Thiel, Iowa State University
- Hajo Freund, Fritz Haber Institute of the Max Planck Society, Germany
- Michael Grunze, University of Heidelberg
- Michael Trenary, University of Illinois at Chicago
- Ib Chorkendorff, Danish Technical University, Denmark
- Jinguang Chen, Columbia University
- Peter Maksymovych, Oak Ridge National Lab

The published schedule and abstracts is attached as a PDF.

C. Summary of how the results were disseminated.

The results of the symposium were disseminated in four ways:

1. The program and abstracts were published on the AVS Symposium website.
2. The audience was drawn from registrants to the AVS International Symposium and Exhibition, which covered a broad swath of the surface science community.
3. The Session was recorded and will be distributed as a video on demand by the AVS.
4. Finally, this report to the ARO TPOC/Program Manager summarizes the symposium.

D. Budget:

A budget of \$8000.00 was used to support registration and travel costs of invited speakers who are not federal employees. No ARO funds were used for food, beverages or refreshments.