

BIBLIOGRAPHY OF PIEZOELECTRICITY
- 1953 -
Squier Signal Laboratory
Contract No. DA 36-039-sc-42587
Third Quarterly Progress Report
Wesleyan University - March 15, 1954

Karl S. Van Dyke
E. Charles Crume, Jr.

Department of the Army Project Number: 3-99-11-022

Signal Corps Project Number: 37-142B

Placed by U. S. Army Signal Corps Engineering Laboratories

Fort Monmouth, N. J.

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**Third Quarterly Progress Report
on Piezoelectric Crystal Studies and Measurements**

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PREFACE

This is the third of this series of Annual Bibliographies of Piezoelectricity. Again the coverage is much more extensive than that of the section on Piezoelectricity "Radio Progress...." in the year which is a feature of the April issues of the Proceedings of the Institute of Radio Engineers, and the bibliography is dated late enough in the new year to enable it to include most of the journals for the full calendar year preceding.

The same scheme of indexing by sub-fields throughout the pages is again used.

It is presumed that the bibliography will as in the past become promptly available on microcards through the Library of Congress so that its circulation may be as wide as is called for. Contract and report numbers should be used in requesting copies.

The authors acknowledge with appreciation the large part which Betty A. Crume has played in the preparation of this volume.

LIST OF JOURNALS CONSULTED.

Acta Crystallographica (Acta Cryst.)
American Journal of Physics (Amer. Jour. Phys.)
American Scientist (Amer. Scientist)
Annalen der Physik (Ann. der Phys.)
Bell Laboratories Record (Bell Lab. Rec.)
Bell System Technical Journal, The (Bell Sys. Tech. Jour.)
Bell Telephone Magazine (Bell Tel. Mag.)
Electrical Communication (Elec. Commun. (London)
Electronics
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Guide to Russian Scientific Periodical Literature (Brookhaven Nat'l Lab.)
Helvetica Physica Acta (Helv. Phys. Acta)
Indian Academy of Sciences, The Proceedings (Proc. Ind. Acad. Sci.)
Journal of the Acoustical Society of America, The (Jour. Acous. Soc. Amer.)
Journal of Applied Physics (Jour. Appl. Phys.)
Journal of the Franklin Institute (Jour. Franklin Inst.)
Journal of the Optical Society of America (Jour. Opt. Soc. Amer.)
Journal of Research of the National Bureau of Standards (Jour. Res. Nat. Bur. Stand.)
Journal of Scientific Instruments (Jour. Sci. Instr.)
Nature (London)
Philosophical Magazine, The (Phil. Mag.)

Physical Review, The (Phys. Rev.)

Physics Abstracts (Phys. Abstr.)

Physics Today

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Proceedings of the Institute of Radio Engineers, The (Proc. IRE)

Proceedings of the Royal Society A, The (Proc. Roy. Soc.)

Proceedings of the Physical Society, The (A and B) (Proc. Phys.
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Review of Scientific Instruments, The (Rev. Sci. Instr.)

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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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General
 Ferroelectrics
 Resonators
 Transducers
 Ultrasonics

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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Resonators
Transducers
Ultrasonics

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General
Ferroelectrics
Resonators
Transducers
Ultrasonics

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TAB U - 2, AD-624, March 20, 1953.

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TAB U - 4, AD-2620, April 6, 1953.

General	Ferroelectrics	Resonators	Transducers	Ultrasonics
x				
	x			
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		x		

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
N. F. W. Bishop, "A theoretical examination of the plastic deformation of crystals by glide," Phil. Mag. <u>44</u> , 51-64, Jan. 1953.	x				
N. P. Bogoroditskii, G. N. Verbitskaya, "Electric properties of ferroelectric ceramics near the curie point," (Zh. tekhn. Fiz. <u>22</u> , 1920-9, (1952) In Russian) Phys. Abstr. <u>56</u> , No. 6758, Oct. 1953.		x			
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V. E. Bottom and others, Colorado A & M - "Research investigations on fundamental and overtone crystals," Contr. DA36-039-sc-66: Quarterly progress report no. 7, Jan. 15 - April 15, 1952. TAB U - 2, AD-623, March 20, 1953. Quarterly progress report no. 8, April 15 - July 15, 1952. TAB U - 2, AD-624, March 20, 1953. Quarterly progress report no. 9, July 15 - Oct. 15, 1952. TAB U - 4, AD-2820, April 6, 1953.			x		

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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(D. H. Hale)					
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(D.R.Hale)					
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(D. R. Hale)					
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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
J. Chapelle, "Recent applications of synthetic crystals," Wireless Engr. <u>30</u> , No. 1046, April, 1953.	x				
W. H. Charbonnet, (Brush Development Co.) - "Increased quantity quartz synthesis," Contr. DA36-039-sc-15371: Quarterly progress report no. 6, Oct. 1 - Dec. 31, 1952. TAB U - 5, AD-2923, April 10, 1953. Quarterly progress report no. 7, Jan. 1 - Mar. 31, 1953. TAB U - 27, AD-14 497, Oct. 9, 1953.	x				
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D. Cohen, L. Silver, (New York University) - "Investigation studies and evaluation of performance of crystal unit characteristics -Task A-Investigation and studies of microwave frequency division," Contr. DA36-039-sc-5493: Quarterly report no. 5, Sept. 15 - Dec. 15, 1952. TAB U - 3, AD 1 300, March 28, 1953. Quarterly report no. 6, Dec. 15, - Mar. 15, 1953. Quarterly report no. 7, Mar. 15 - June 15, 1953. Quarterly report no. 8, (final report), June 15 - Sept. 15, 1953.		x			

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Jan. 15 - April 15, 1952.

(V. E. Bottom and others)

TAB U - 2, AD-623, Mar. 20, 1953.

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April 15 - July 15, 1952.

(V. E. Bottom and others)

TAB U - 2, AD-624, Mar. 20, 1953.

Quarterly progress report no. 9

July 15 - Oct. 15, 1952.

(V. E. Bottom, J. Deininger)

TAB U - 4, AD-2620, April 6, 1953.

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Oct. 15, 1952 - Jan. 15, 1953.

(V. E. Bottom, and others)

TAB U - 13, AD-6,524, June 5, 1953.

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General

Ferroelectrics

Resonators

Transducers

Ultrasonics

x

x

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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
Consolidated Engineering Corp., "Pressure transducer," Electronics <u>26</u> , 274-76, Jan. 1953.				x	
Consolidated Engineering Corp., "Pressure pickup," Electronics <u>26</u> , 324-26, Jan. 1953.				x	
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	General	Ferroelectrics	Resonators	Transducers	Ultrasounds
L. E. Cross, "Ferroelectricity in the perovskite type structures," (A paper given at the Spring Provincial meeting in the Dept. of Physics, Univ. of Leeds.) Proc. Phys. Soc. <u>66</u> , Sec. B, xvii; Dec. 1, 1953.		x			
L. E. Cross, "The dielectric properties of barium titanate single crystals in the region of their upper transition temperature," Phil. Mag. <u>44</u> , 1161, Oct. 1953.		x			
S. Dairiki, T. E. Lawrence and R. A. Mapleton, "Equivalent network representations for solid and mercury delay lines," Jour. Acous. Soc. Amer. <u>25</u> , 841-53, Sept. 1953.				x	
W. C. Dash, "Additive coloration of single crystals of BaO," (Bulletin) Amer. Phys. Soc. <u>28</u> , 23, Jan. 22, 1953.	x	x			
L. Davis, Jr., L. G. Rubin, "Some dielectric properties of barium-strontium titanate ceramics at 3000 megacycles," Jour. Appl. Phys. <u>24</u> , 1194, Sept. 1953.		x			
A. deBretteville, Jr., E. D. Harris, "Threshold Field vs temperature slope for paraelectric-ferroelectric change in BaTiO ₃ ," (Bulletin) Amer. Phys. Soc. <u>28</u> , 30, Nov. 27, 1953.		x			
A. deBretteville, Jr., "Threshold field and free energy for the antiferroelectric-ferroelectric phase transition in lead zirconate," (Bulletin) Amer. Phys. Soc. <u>28</u> , 15, Mar. 26, 1953.		x			

	General	Ferroelectrics	Acoustic	Transducers	Ultrasonics
J. J. DeBuske, "The N1 carrier oscillators," Bell Lab. Rec. <u>XVII</u> , 48-51, Feb. 1953.			x		
H. Deresiewicz, (Columbia University) - "Effects of an oscillating torsional couple on the contact surfaces of elastic spheres," Contr. Nonr-266(09): Tech. report no. 5, Feb. 1953.			x		
A. F. Devonshire, "Theory of ferroelectrics," (A paper given at the Spring Provincial meeting in the Dept. of Physics, Univ. of Leeds.) Proc. Phys. Soc. <u>66B</u> , xvii; Dec. 1, 1953.		x			
A. Dognon - BOOK REVIEW - "Les Ultrasons et Leurs Applications," (Presses Universitaires, Paris, 1953, pp 161). J. phys. et radium <u>14</u> , 558, Oct. 1953.					x
C. E. Duke, (Penn State College) - "Analysis of damping in elastic solids," Contr. DA36-061-ord-237: Tech. report no. 1, Sept. 1, 1952 - Feb. 28, 1953. TAB U - 6, AD-4, 483, April 20, 1953.	x		x		
R. H. Dungan and others, "Lattice Constants and dielectric properties of barium-titanate-stannate-strontium- titanate bodies," Jour. Amer. Ceram. Soc. <u>35</u> , 318-321, Dec. 1952.		x			

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
L. Egerton, "Some factors affecting the dielectric and piezoelectric properties of barium titanate ceramics," (Talk given at the Electrical Insulation Conference, Pocono Manor, Pa.) Bell Lab. Rec. <u>XXXI</u> , 511, Dec. 1953.		x			
I. Egerton, S. E. Koonce, "The structure of barium titanate ceramics, as observed with the electron microscope," (Talk given at the Basic Science Section, American Ceramic Society, Schenectady, N. Y.) Bell Lab. Rec. <u>XXXI</u> , 511, Dec. 1953.		x			
Endevco Corp., "Accelerometer," Electronics <u>26</u> , 292, Jan. 1953.				x	
C. Ener, "On the study of the wave field of a vibrating quartz crystal," (Rev. Fac. Sci. Univ. Istanbul A, <u>18</u> , 101-09, Jan. 1953.) Phys. Abstr. <u>56</u> , No. 4668, July 1953.			x	x	x
J. Euler, "Electrets," Z. Ver. dtsh. Ing. <u>94</u> , 481-83, June 1, 1952.	x				
H. T. Evans, Jr. (Mass. Institute of Technology) - "An x-ray diffraction study of barium titanate," Contrs. N5ori-07801 and N5ori-07858: Tech. report no. 58 January 1953.		x			
M. D. Fagen, "Performance of ultrasonic vitreous silica delay lines," Proc. NEC (Chicago) <u>7</u> , 380-89, 1951.				x	

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
R. D. Fay, "Effect of losses on transmittivity of plates," (Program) Acous. Soc. Amer. 20, May 1953.					x
V. H. Fedorovich, "Acoustical method of measurement of vibration," (Zh. Tekhn. Fiz. 22, 238-44, 1952, in Russian), Jour. Acous. Soc. Amer. 24, 788, Nov. 1952.					x
E. G. Fesenko, "The domain structure of lead titanate," Dopl. Akad. Nauk. SSSR 88, 785-86, 1953 in Russian.		x			
P. G. T. Fogg, P. A. Hanks and J. D. Lambert, "Ultrasonic dispersion in halo-methane vapours," Proc. Roy. Soc. 219, 490-99, Oct. 7, 1953.					x
P. W. Forsberg, Jr. (Mass. Institute of Technology) - "Effect of a two-dimensional pressure on the curie point of barium titanate," Tech. Report no. 74, Oct. 1953.		x			
D. R. Frankl, T. A. Read, "Internal friction of rocksalt single crystals," (Bulletin) Amer. Phys. Soc. 28, 22, Jan. 22, 1953.	x		x		
B. C. Frazer and Ray Pepinsky, "A phase transition in CaH_2AsO_4 ," (Bulletin) Amer. Phys. Soc. 28, 14-15, Mar. 26, 1953.		x			
B. C. Frazer, "A phase transition in $\text{ND}_4\text{D}_2\text{AsO}_4$," (Bulletin) Amer. Phys. Soc. 28, 48, Mar. 26, 1953.		x			
B. C. Frazer, R. Pepinsky, "X-ray analysis of the ferroelectric transition in KH_2PO_4 ," Acta Cryst. 6, 273-85, Mar. 10, 1953.		x			

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
A. F. Frederickson, J. E. Cox, Jr. and P. Y. Feng, (Washington University) - "Research related to the formation and growth of pegmatite minerals," Contr. DA38-039-sc-5513: Quarterly progress report no. 6, July 16, 1952 - Oct. 15, 1952. Quarterly progress report no. 7, Oct. 16, 1952 - Jan. 15, 1953. (A. F. Frederickson, J. E. Cox, Jr.) Final Report, Mar. 15, 1951 - Mar. 14, 1953. (Frederickson, J. E. Cox, Jr.) First Report, April 16, 1953 - July 15, 1953. (A. F. Frederickson, J. E. Cox, Jr.)	x				
C. Fröndel, (Harvard University) - "Investigation into effects of radiation on the physical properties of quartz," Contr. DA36-039-sc-15350: Quarterly progress report no. 4, April 30 - July 30, 1952. Quarterly progress report no. 5, July 30 - Oct. 30, 1952. TAB U - 11, AD-7, 256, May 22, 1953. Quarterly progress report no. 6, Oct. 30, 1952 - Jan. 30, 1953. TAB U - 24, AD-12 917, Sept. 9, 1953. Quarterly progress report no. 7, Jan. 30 - April 30, 1953.	x				
A. D. Frost, C. R. Mingos and L. A. Howard, "An electric wave filter combining piezoelectric divided electrode units," (Bulletin) Amer. Phys. Soc. <u>28</u>, 47, April 30, 1953.			x		
W. J. Fry, R. B. Fry, "Temperature changes produced in tissue during ultrasonic irradiation," Jour. Acous. Soc. Amer. <u>25</u>, 6-11, Jan. 1953.					x

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
W. J. Fry, "Action of ultrasound on nerve tissue," Jour. Acous. Soc. Amer. <u>25</u> , 1-5, Jan. 1953.					x
H. Futaba, "On some dielectric properties of a few solids having 'hydrogen bond' in their crystal structures," Jour. Fac. Sci. <u>4</u> , 217-27, Nov. 1953. (Hokkaido Univ.).		x			
W. J. Galloway, "Simple calibration technique for low-sensitivity transducers," Acous. Soc. Amer. <u>25</u> , 1127-29, Nov. 1953.				x	
J. W. Gells, "Test set for the M1 carrier system," Bell Lab. Rec. <u>XXXI</u> , 10-14, Jan. 1953.			x		
Georgia Institute of Technology - (R. J. Rauderbaugh and others) - "Investigation of frequency control above 150 megacycles," Contr. DA36-039-sc-5410: Final report Jan. 31, 1953 TAB U - 16, AD-9,802, June 29, 1953			x		
"Aging study of metal plating on quartz crystals," Contr. DA36-039-sc-147: Quarterly report no. 6, Oct. 1, 1951 - Jan. 1, 1952. TAB U - 7, AD-4,475, April 24, 1953.			x		
Quarterly report no. 7, Jan. 1 - April 1, 1952. TAB U - 9, AD-6,091, May 8, 1953.					
"Aging study of metal plating on quartz crystals," Contr. DA36-039-sc-42453: (Cont. Contr. sc-147) - Quarterly report no. 2, Aug. 1 - Nov. 1, 1952. Quarterly report no. 3, Nov. 1, 1952 - Feb. 1, 1953. TAB U - 25, AD-13 814, Sept. 18, 1953.			x		
Quarterly report no. 4, Feb. 1 - May 1, 1953. Quarterly report no. 5, May 1 - Aug. 1, 1953.					

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Georgia Institute of Technology - Vernon Crawford and D. W. Fraser, "Precision frequency control techniques (500 Mc and higher), " Contr. DA36-039-sc-42590: Progress report No. 1 Feb. 1 - May 1, 1953.	x		x		
E. A. Gerber, "A review of methods for measuring the constants of piezoelectric vibrators," Proc. IRE <u>41</u> , 1103-1112, Sept. 1953.			x		
G. M. Giannini & Co., Inc., "Oil-filled accelerometer unit," Electronics <u>26</u> , 403-05, Mar. 1953.				x	
J. H. Gibbs, "Ferroelectricity in rochelle salt," (Bulletin) Amer. Phys. Soc. <u>28</u> , 23, April 30, 1953.		x			
A. E. Glauberman, A. F. Lubchenko, "Theory of the dielectric properties of barium titanate in stationary fields," (Zh. Eksp. Teor. Fiz., <u>23</u> , 183-98, 1952.) Phys. Abstr. <u>56</u> , No. 5456, Aug. 1953.		x			
A. E. Glauberman K. Gossiau, "Precision frequency measurements," Frequenz <u>6</u> , 249-55, Sept. 1952.			x		
M. Greenspan, M. C. Thompson, Jr., "Eleven megacycle interferometer for low pressure gases," Jour. Acous. Soc. Amer. <u>25</u> , 92-6, Jan. 1953.					x
H. J. Grenville-Wells, (Mass. Inst. Tech.) - "A graphical method of evaluating certain crystallographic structure factors," Contrs. N5-ori-07801, N5-ori-07858: Tech. report no. 65, Feb. 1953 TAB U - 9, AD-6,196, May 9, 1953.	x				
E. P. Gross, (Mass. Inst. Tech.) - "Behavior of slow electrons in polar crystals," Contrs. N5-ori-07801, N5-ori-07858: Tech. report no. 55, Dec. 1952.		x			

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E. Grossetti, "Sul modo di vibrazione della superficie di una lamina di quarzo piezoelectrico," IL Nuovo Cimento <u>X</u> , 151-6, Feb. 1953.			X		
J. W. Gruner, L. Gardiner, (Univ. of Minnesota) - "Twinning studies of quartz type structures," Contr. DA36-038-sc-5419: Quarterly report no. 4, Dec. 16, 1951 - Mar. 15, 1952. Quarterly report no. 5, Mar. 15 - June 15, 1952. Quarterly report no. 6, Sept. 16 - Dec. 15, 1952. Quarterly report no. 7, Dec. 16, 1952 - Mar. 15, 1953. Final report covering period of Dec. 1, 1950 - June 30, 1953.	X		X		
C. E. Goodell, "Ultrasonic recorder gages torpedo depth," Electronics <u>26</u> , 118-21, Feb. 1953.					X
F. T. Gucker, Jr., R. M. Haag, "Compressibility of solutions II. An ultrasonic study of aqueous solutions of some simple amino acids and their uncharged isomers at 25° C," Jour. Acous. Soc. Amer. <u>25</u> , 470-79, May 1953.					X
A. Guinier, - BOOK REVIEW - "X-ray crystallographic technology," edited by T. L. Tippell and Kathleen Lonsdale, London: Hilger and Watts, 1952. (U.S. Distributor - Jarrell Ash, Boston), pp 330 - illus. + plates.	X				
S. B. Gurevich, V. G. Panchenko, "Ferroelectric materials," (Priroda No. 3, 54-61, Mar. 1952), Wireless Engr. <u>30</u> , No. 1373, May 1953.		X			

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
Harshaw Chemical Co. - H. Kremers and others - "Barium titanate and related crystal growth," Contr. DA36-039-sc-15493: Interim report no. 2 Oct. 1 - Dec. 31, 1952. TAB U - 10, AD-6,495, May 18, 1953. Interim report no. 3 Jan. 1 - 31 Mar. 1953. TAB U - 21, AD-11,339, July 31, 1953.	x	x			
Harvard University - C. Frondel - "Investigation into effects of radiation on the physical properties of quartz," Contr. 36-039-sc-15350: Quarterly progress report no. 4 April 30 - July 30, 1952 Quarterly progress report no. 5. July 30 - Oct. 30, 1952 TAB U - 11, AD-7,256, May 22, 1953. Quarterly progress report no. 6 Oct. 30, 1952 - Jan 30, 1953. TAB U - 24, AD-12 917, Sept. 9, 1953. Quarterly progress report no. 7 Jan 30 - April 30, 1953.	x		x		
O. S. Heavens, "Surface layer on crystalline quartz," Acta Cryst. 6, 571-72, June 10, 1953.	x		x		
F. M. Henry and K. Lonsdale (Edited by -) BOOK REVIEW - "International tables for x-ray crystallography," (Published for the International Union of Crystallography - Birmingham: Kynoch Press 1952. pp xli + 558, 237 figs.	x				

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
J. F. Herrick, "Temperatures produced in tissues by ultrasound " Jour. Acous. Soc. Amer. <u>25</u> , 12-16, Jan. 1953.					X
G. Herrmann - (Columbia University) - "Forced motions of elastic rods," Contr. Nonr-266(09): Tech. report no. 4, Feb. 1953.			X		
G. Hess (Lavole Labs.) - "Development of frequency meter," Contr. DA36-039-sc-5526: Quarterly progress report no. 5 Aug. - Nov. 1952. Quarterly progress report no. 6 Dec. 1952 - Feb. 1953. Quarterly progress report no. 7 Mar. - May 1953.			X		
W. Heywang, "The character of the higher transition in BaTiO_3 ," (Entwicklungsber. Siemens & Halske, <u>15</u> , 87-90, May 1952. In German) Phys. Abstr. <u>56</u> , No. 5455, Aug. 1953.		X			
Hilger & Watts Ltd., "Quartz crystal x-ray goniometer," Jour. Scien. Instru. <u>30</u> , 143, April 1953.	X				
R. W. Hill, P. L. Smith, "The anomalous specific heat of ferrous ammonium sulphate," Proc. Phys. Soc. <u>66A</u> , 228-32, Mar. 1, 1953.			X		
K. Hirakawa, T. Okada, "On the dielectric properties of tungsten trioxide," (Mem. Fac. Sci. Kyūsyū Univ. B, <u>1</u> , No. 1, 1-8, 1951) Phys. Abstr. <u>56</u> , No. 207, Jan. 1953.			X		

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P. M. Honnell, "Anomalous transient response of a crystal pick-up," Jour. Acous. Soc. Amer. <u>25</u> , 570-74, May 1953.			x	
T. F. Hueter, "A temperature invariant impedance point in the frequency response of circular barium titanate transducers," Jour. Acous. Soc. Amer. <u>25</u> , 152, Jan. 1953.		x	x	
J. K. Hulm, "Low-temperature dielectric properties of cadmium and lead niobates," (Letter to the editor), Phys. Rev. <u>92</u> , 504-05, Oct. 15, 1953.		x		
Institute of Radio Engineers, "Radio progress during 1952," Proc. IRE <u>41</u> , 452-507, April 1953.	x			
Y. Itaka, "A technique for testing the piezoelectric properties of crystals," Acta Cryst. <u>6</u> , 663-64, July 10, 1953.	x		x	
H. Iwayanagi, "Measurement of permittivity of mixed barium and strontium titanate in 3000 Mc/s region," Jour. Phys. Soc. Japan <u>8</u> , 525-30, July - Aug. 1953.		x		
K. S. Iyengar, "Temperature dependence of ultrasonic velocity in liquid mixtures," (Proc. Ind. Acad. Sci. <u>35</u> , 190-93, April 1952,) Jour. Acous. Soc. Amer. <u>24</u> , 797, Nov. 1952.				x

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
C. Jaccard, W. Känzig and M. Peter, "Das verhalten von kollidalen seignetteelektrika I, Kaliumphosphat KH_2PO_4 , " Heiv. Phys. Acta <u>XXVI</u> , No. 5, pp 521, (1953),		x			
R. W. James, BOOK REVIEW - "X-ray crystallography," 5th edition, (London: Methuen and Co. 1952. pp X + 101. Proc. Phys. Soc. <u>66A</u> , 499, May 1, 1953.	x				
E. T. Jaynes, BOOK REVIEW - "Ferroelectricity," (Princeton University Press, pp 144) Physics Today, <u>6</u> , 31, Mar. 1953.	x	x			
F. Jona, R. Pepinsky, (Penn State College) - "Ferroelectric and high dielectric crystals - crystal preparation for dielectric measurements," Contr. AF -33(038)-12645 Tech. report no. 4, Oct. 1, 1952. TAB U - 15, AD-9,048, June 19, 1953.		x			
F. Jona, R. Pepinsky, "Study of the transition in $LiNH_4C_4H_4O_6 \cdot H_2O$," (Bulletin) Amer. Phys. Soc. <u>28</u> , 9, June 18, 1953), Phys. Rev. <u>92</u> , 845, Nov. 1, 1953.		x			
F. Jona, R. Pepinsky, "Dielectric properties of some double tartrates," (Letter to the editor), Phys. Rev. <u>92</u> , 1577, Dec. 15, 1953.		x			
E. Jones, "Cemented piezoelectric accelerometers," Rev. Sci. Instr. <u>24</u> , 1151, Dec. 1953.					x

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K. Kambe, I. Nakada and H. Takahasi, "Hysteresis Loops of ceramic barium titanate at high frequencies I," Jour. Phys. Soc. Japan <u>8</u> , 9-14, Jan.-Feb. 1953.		x			
K. Kambe, "Hysteresis loops of ceramic barium titanate at higher frequencies II," Jour. Phys. Soc. Japan <u>8</u> , 15-20, Jan.-Feb. 1953.		x			
T. R. Kane (Columbia University) - "Reflection of flexural waves at the edge of a plate," Contr. Nonr-266(09): Tech. report no. 6, Feb. 1953.			x		
W. Kanzig, R. Sommerhalder, "Das verhalten von kolloidalen selnneteelektrika II, Theoretische Betrachtungen," Helv. Phys. Acta <u>26</u> , 603-10, 1953.		x			
A. Karolus, "A new quartz oscillator for the frequency range 1-20 kc/s," (Elektrotech. Z., <u>74</u> , 136-140, Mar. 1953.) Wireless Engr. <u>30</u> , No. 2267, Aug. 1953.			x		
J. Karpovich, "The study of the molecular structure of organic liquids by means of ultrasonics," (Program) - Accus. Soc. Amer. 11, May 1953.					x
H. F. Kay, "Report on researches with ferroelectric materials," (Rep. Brit. Elect. Res. Assoc. Ref. L/T257, 18, (1951)). Phys. Abstr. <u>56</u> , No. 3286, May, 1953.		x			
S. Kelly, "Piezo-electric crystal pick-ups," (J. Brit. Instn. Radio. Engrs. <u>13</u> , 161-72, Mar. 1953.) Elec. Engr. Abstr. <u>56</u> , No. 3006, July 1953.				x	

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W. F. Kennedy, J. E. King, (Davies Labs., Inc.) - "Crystal oscillators," Contr. Nonr-843(00): Summary Report, Nov. 1, 1951 - Feb. 28, 1953. TAB U - 16, AD-9, 610, June 29, 1953.			x		
E. Kettel, "The stability of quartz oscillators," Wireless Engr. 30, No. 1274, May 1953. (Telefunken Ztg. 35, 246-258, Nov. 1953.)			x		
E. Kettel, "Quartz-crystal circuit with variable coupling as oscillator and discriminator," (Telefunken Ztg. 25, 265-69, Nov. 1952.) Wireless Engr. 30, No. 1277, May 1953.			x		
V. P. Konstantinova, A. V. Shubnikov, "Vibrations of 'textural' piezoelectric rochelle salt laminae," (Zh. tekhn. fiz. 21, 982-9 (1951) In Russian) Phys. Abstr. 55, No. 1469, Mar. 1953.				x	
M. Kornetzki, "The nonlinearity of titanate capacitors," Proc. IRE 41, 1686 (Abstr. No. 2916) Nov. 1953.		x			
M. S. Kosman, "Some remarks on the paper 'Dynamics of barium titanate polarization process,'" (Ah. eksper. teor. Fiz. 23, 439, (1952) In Russian) Phys. Abstr. 56, No. 3289, May 1953.		x			
H. C. Kremers and others (Harshaw Chemical Co.) - "Barium titanate and related crystal growth," Contr. DA36-039-sc-15493 (cont. of Contr. DA36-039-sc-74) Interim report no. 1, July 1 - Sept. 30, 1952. Interim report no. 2, Oct. 1 - Dec. 31, 1952 TAB U - 10, AD-6, 495, May 18, 1953. Interim report no. 3, Jan. 1 - Mar. 31, 1953. TAB U - 21, AD-11, 339, July 31, 1953.	x	x			

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M. Kumai, I. Domuro, "On the time lag of the piezoelectric effect of rochelle salt," Jour. Fac. Sci. <u>4</u> , 247-52, Nov. 1953.		x			
A. L. Lane, "Design techniques for a high frequency transducer with a wide-beam searchlight pattern," Jour. Acous. Soc. Amer. <u>25</u> , 697-702, July 1953.				x	
A. L. Lane, "Barium titanate admittance-temperature characteristics," Jour. Acous. Soc. Amer. <u>25</u> , 873-78, Sept. 1953.		x			
T. Lange, "Methods for investigating oscillation cavitation in liquids by means of ultrasonics," Akust. Beihefte, No. 2, 75-82, 1952.					x
Lavole Labs. - G. Hess, "Development of frequency meter," Contr. DA36-039-sc-5526: Fifth quarterly report, Aug. 1952 - Nov. 1952. Sixth quarterly report, Dec. 1952 - Feb. 1953. Seventh quarterly report, Mar. 1953 - May 1953.			x		
H. B. Law, J. S. McClements (Post Office Engr. Dept.) - "Design and construction of an automatic response recorder, for use in the production of quartz oscillator plates," (Nov. 21, 1952.) TAB U - 18, AD-10, 228, July 13, 1953.			x		

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 (C. R. Acad. Sci. (Paris) 236, 1409-12,
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 Phys. Abstr. 56, No. 6755, Oct. 1953.

Y. LeCorre, "Détermination des sept constantes
 élastiques dynamiques du phosphate monoammonique,"
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S. LeMontagner, J. LeBot and Y. Allain, "The
 complex dielectric constant at 9500 Mc/s of some
 phosphates as a function of temperature,"
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R. B. Lindsay, (Brown University) -
 Contr. N6-ori-215, Task 3, Tech. report no. 5.
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I. Lindqvist, "The structure of the hexaniobate
 ion in $7 \text{Na}_2\text{O} \cdot 6 \text{Nb}_2\text{O}_5 \cdot 32 \text{H}_2\text{O}$," (Ark. Kemi. 5,
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A. Linz, Jr., "Some electrical properties of
 strontium titanate,"
 Phys. Rev. 91, 753-4, Aug. 1, 1953.

General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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	General	Piezoelectrics	Resonators	Transducers	Ultrasonics
A. A. McKenzie, "Ultrasonic thickness measurement," Electronics <u>21</u> 144-46, Jan. 1953.					x
F. L. McNamara, T. F. Rogers, "Direct viewing of an ultrasonic beam in a transparent solid," Jour. Acous. Soc. Amer. <u>23</u> , 323-9, Mar. 1953.					x
M. McQuarrie, "Time effects in the hysteresis loop of polycrystalline bariumtitanate," Jour. Appl. Phys. <u>24</u> , 1334-5, Oct. 1953.		x			
H. J. McSkimin, "Measurement of elastic constants at low temperatures by means of ultrasonic waves," Jour. Appl. Phys. <u>24</u> , 983-97, Aug. 1953.					x
R. A. Mapleton, "Diffraction patterns for solid delay lines," Jour. Acous. Soc. Amer. <u>25</u> , 516-524, May 1953.					x
A. W. Marsh, E. K. Williams, "The performance of an 80 KC/S crystal controlled oscillator," Tele. Res. Estab. (Gt. Brit.) tech. note no. 153. Sept. 22, 1952.			x		
M. Marutake, "The effect of electric field on the domain structures in rochelle salt," Wireless Engr. <u>30</u> , No. 2050, July 1953.		x			
N. P. Mason, "Use of barium titanate in capacitors, transducers, dielectric amplifiers and storage devices." (talk given to IRE, Connecticut Valley, Middletown, Ct.) Bell Lab. Rec. <u>XXXI</u> , 39, Jan. 1953.		x			

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 transducers," (talk given at Acous. Soc. Amer.
 Meeting, Cleveland)
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General
 Ferroelectrics
 Resonators
 Transducers
 Ultrasonics

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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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Quarterly progress report no. 3
Nov. 1, 1952 - Jan. 31, 1953.
Quarterly progress report no. 4
Feb. 1, 1953 - April 30, 1953.
Quarterly progress report no. 5
May 1, 1953 - July 31, 1953.
(B. Niederman et al.)

"Low frequency ring resonators,"
Contr. DA36-039-sc-15338

Quarterly progress report no. 4
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General
Piezoelectrics
Resonators
Transducers
Ultrasonics

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 (Part 1 of its report no. 2024)

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 July 1 - Oct. 1, 1952.
 (Part 2 of its report no. 2024)
 (G. R. Shelton et al)

General	Electronics	Electronics	Electronics	Electronics
		x		
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 with quartz crystals,"
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 cuitry for frequency control,"
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 (R. M. Challahan, J. F. Murray,)
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 "An electron diffraction investigation of the
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 detection of soft x-rays," Contr.
 Contr. DA36-039-sc-5599:
 Quarterly progress report no. 7
 Jan 1 - Mar. 31, 1953.

General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
J. T. Nelson, M. Taken (University of Oregon) - "Investigation of scintillation counters for the detection of soft x-rays," Contr. DA35-039-sc-5589: Quarterly progress report no. 8 April 1 - June 30, 1953.	x				
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B. Niederman, S. F. Lapin, (Motorola, Inc.)

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Contr. DA36-039-sc-15535:

Quarterly progress report no. 1

May 1 - July 31, 1952.

Quarterly progress report no. 2

Aug. 1 - Oct. 31, 1952.

Quarterly progress report no. 3

Nov. 1, 1952 - Jan. 31, 1953.

Quarterly progress report no. 4

Feb. 1, - April 30, 1953.

Quarterly progress report no. 5

May 1 - July 31, 1953.

"Low frequency ring resonators, "

Contr. DA36-039-sc-15338:

Quarterly progress report no. 4

Mar. 25 - June 25, 1952.

(B. Niederman, L. G. Chase)

Quarterly progress report no. 6

Dec. 25, 1952 - Mar. 25, 1953.

(B. Niederman, L. G. Chase, R. Christy)

Quarterly progress report no. 7

Mar. 25 - June 25, 1953.

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phenomena for frequency control, "

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April 30, 1953.

General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
N. S. Novosil'tsev, A. L. Khodakov and M. S. Shul'man, "The effect of deviations from the stoichiometric composition on the properties of BaTiO ₃ ceramics in strong fields," (Zh. Eksp. Teor. Fiz. <u>23</u> , 330-39, 1952) Proc. IRE <u>41</u> , 1690, Nov. 1953.	x				
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General
 Ferroelectrics
 Resonators
 Transducers
 Ultrasonics

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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
S. Parthasarathy and others, "Piezo-electric oscillations of quartz plates at even and half-odd harmonics," Nature (London) <u>171</u> , 216-17, Jan. 31, 1953.			x		
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S. Parthasarathy, and others, "Die Abhängigkeit der schallintensität am schallstrahler von absorptionskoeffizienten in flüssigkeiten," Z. für Phys. <u>134</u> , 408-12, Mar. 1953.					x
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S. Parthasarathy and others, "Equivalence of sonic and thermal energies," Ann. der Phys. <u>12</u> , 8-16, April 1953.					x
W. Pavelick and others, (Penn State College) - "Ferroelectric and high dielectric crystals - crystal growth from solutions," Contr. AF-33(038)-12645: Tech. report no. 8, Oct. 1, 1952 TAB U - 14, AD-9,050, June 15, 1953.		x			
T. A. Pendleton, (National Bureau of Standards) "Underground quartz crystal resonators," Report No. 2035, Oct. 29, 1952. TAB U - 4, AD-3024, April 6, 1953.			x		

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
Pennsylvania State College -					
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"Ultrasonics in metals," Contr. DA36-061-ord-106: First Annual report, Sept. 1, 1951 Aug. 31, 1952. (J. N. Brennan) TAB U - 11, AD-3,319, May 22, 1953.					x
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"Hydrothermal crystal studies," Contr. DA36-039-sc-5594: (R. Roy and others), Quarterly progress report no. 7, Jan. 1 - Mar. 31, 1953.	x				
R. Pepinsky (Penn State College) -					
"Stroboscopic x-ray studies of oscillating crystals," Contr. DA36-039-sc-21: 11th interim progress report. May 15 - Aug. 15, 1952. TAB U - 15, AD-9,145, June 19, 1953.	x	x			

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
R. Pepinsky (Penn State College) - "Some aspects of neutron single crystal analysis," Contr. N6onr-26216, 1952. TAB U - 19, AD-10,375, July 17, 1953. "Stroboscopic x-ray studies of oscillating crystals," Contr. DA36-039-sc-21: Final report, Jan. 1953. TAB U -26, AD-14,083, Sept. 30, 1953. "Ferroelectric and high dielectric crystals - dielectric measurements of crystals," Contr. AF 33(038)12645: Progress report no. 1, tech report no. 3. Feb. 1, 1952. TAB U -15, AD-9,047, June 19, 1953. "X-ray diffraction studies of piezoelectric crystals," Contr. DA36-039-sc-42598: First quarterly progress report, Nov. 15, 1952 - Feb. 1953.	x	x			
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T. A. Perls, (NBS), "Proceedings of symposium on barium titanate accelerometers," NBS report 2654, Aug. 1953.		x		x	

	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
G. A. Petticrew and others (Univ. of Illinois) - "Theory of oscillator circuits," Contr. DA36-039-sc-205: Interim progress report no. 205-8, Oct. 15, 1952 - Jan. 15, 1953.			x		
G. A. Petticrew, B. Silverman, (Univ. Illinois) - "Theory of oscillator circuits," Contr. DA36-039-sc-205: Interim progress report no. 205-9, Jan. 15, 1953 - April 15, 1953.			x		
A. Plekara, Z. Pajak, "Thermal Pseudohysteresis of the dielectric constant for ferroelectric titanates," Acta Phys. Polon. <u>XI</u> , 256, 1952.		x			
A. Plekara, Z. Pajak, "Effect of Electric field on the dielectric constant of ferroelectric titanates," Acta Phys. Polon. <u>XII</u> , 170-180, 1953.		x			
A. C. Prichard, M. Bernstein, "Crystal impedance meters replace test sets," Electronics <u>26</u> , 176-80, May 1953.			x		
Princeton University - "The modulation-grid method for eliminating doppler broadening of microwave spectroscopic lines," Cont. DA36-039-sc-5541: Final Report, April 1, 1951 - Mar. 31, 1952. (G. S. Newell)	x				
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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
R. L. Pritchard, "Optimum directivity patterns for linear point arrays," Jour. Acous. Soc. Amer. <u>25</u> , 879-891, Sept. 1953.				x	
R. L. Pritchard, "Approximate calculation of the directivity factor of linear point arrays," (Letter to the editor) Jour. Acous. Soc. Amer. <u>25</u> , 1010-11, Sept. 1953.				x	
C. F. Pulvari, "Determining the usefulness of barium titanate material for memory devices in large scale digital calculators," (University of America), Contr. AF 18(600)-106: Progress report no. 1, April, 1952. TAB U -2, AD-663, Mar. 20, 1953. Progress report no. 2, July, 1952. TAB U 2, AD-664, Mar. 20, 1953. Progress report no. 5, April 1953. TAB U - 18, AD-8, 660, June 29, 1953.		x			
B. Püschel, "Voltage measurements on rochelle salt under compressive stress," Arch tech. Messen, 197-98, September, 1952.		x			
Radio Corporation of America - (E. M. Washburn) - "Research investigations pertaining to low frequency contoured AT-cut quartz plates," Contr. DA36-039-sc-5460: Quarterly progress report no. 7, July 15 - Oct. 14, 1952. TAB U - 9, AD-6, 242, May 8, 1953. Final report, Jan. 14, 1951 - Jan. 14, 1953. TAB U - 18, AD-9, 833, June 29, 1953,			x		

Radio Corporation of America - (L. E. Norton)
 "Investigation and study of practical utilization
 of molecular absorption phenomena for
 frequency control," Contr. DA36-039-sc-15525:

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 April 30, 1953.

"Study of aging effects on military plated
 crystal units," Contr. DA36-039-sc-42670:

First Quarterly progress report,
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(E. M. Washburn)

"Crystal units, low frequency services for
 research and development of,"

Contr. NChsr-52463:

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 of Technology) - "Aging study of metal plating
 on quartz crystals," Contr. DA36-039-sc-147:

Quarterly report no. 6, Oct. 1, 1951 -
 Jan. 1, 1952.

TAB U - 7, AD-4, 475, April 24, 1953.

Quarterly report no. 7, Jan. 1 -
 April 1, 1952.

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General
 Ferroelectrics
 Resonators
 Transducers
 Ultrasonics

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General
Ferroelectrics
Resonators
Transducers
Ultrasonics

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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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 Resonators
 Transducers
 Ultrasonics

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Resonators
Transducers
Ultrasonics

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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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	General	Ferroelectricity	Resonators	Transducers	Ultrasonics
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General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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	General	Ferroelectrics	Resonators	Transducers	Ultrasonics
Wesleyan University - "Piezoelectric crystal studies and measurements," Contr. DA36-039-sc-42537: Quarterly report no. 1, Feb. 1 - April 30, 1953. (E. S. Creeger, K. S. Van Dyke) Quarterly report no. 2, May 1 - July 31, 1953. (K. S. Van Dyke)	x		x		
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General	Ferroelectrics	Resonators	Transducers	Ultrasonics
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