



# **50<sup>th</sup> Anniversary Celebration of the Electronics Division**



# In 1957...

- The Electronics Division grew out of the Whitewares Division

## White Wares Division Officers, 1958-59



H. W. Thiemecke  
Trustee



H. J. Beckemeyer  
Chairman



A. M. Illing  
Vice-Chairman



Edward J. Smoke  
Secretary



# Materials & Equipment—White Wares

reported by A. M. Illing

A concurrent session of "Ferroelectric Ceramics," Friday morning, under the chairmanship of William J. Koch, was well attended. Technical sessions on white wares, with Lyle A. Holmes as chairman, also drew a large crowd.

While there was some comment that there were not enough papers of especial interest to plant men, this condition undoubtedly will correct itself, if and when the ferroelectric group becomes a separate division.

Beautiful autumn weather welcomed the Materials & Equipment and White Wares Divisions to Bedford Springs, September 26–28. Attendance broke all previous records, with 361 registered of whom 131 were accompanied by their wives, giving a total registration of 492, as compared with 467 the previous year.

Thursday was primarily devoted to A.S.T.M. meetings of subcommittees and a general session of C-21. The executive subcommittee reported that a reorganization of C-21 has been accomplished and approved, dissolving the research subcommittee and establishing a three member editorial subcommittee and a subcommittee on floor and wall tile.

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While there was some comment that there were not enough papers of especial interest to plant men, this condition undoubtedly will correct itself, if and when the ferroelectric group becomes a separate division.

The golf tournament Friday afternoon was under the leadership of Mr. Holmes. For those with no aptitude for chasing a little white ball over the meadows there was a technical session on ferroelectric ceramics with Ed Smoke as chairman.

For those with a light foot there was dancing both Thursday and Friday nights. Thursday night also had a bingo party and on Friday there was a moving picture.

Saturday morning's technical session was under the chairmanship of Carl F. Schaefer. Clair R. Oberst, general chairman of the meeting, with his capable aides from both Divisions, made this joint fall meeting most successful.

(See p. 435 for pictures of the M & E, White Wares meeting.)



# 1957 Divisional Meeting

Friday Morning, September 27

9:30—Concurrent Session

## Ferroelectric Ceramics

*Session Chairman:* WILLIAM J. KOCH  
A.C.F. Electronics, Alexandria, Va.

1. **Military Applications of Ferroelectrics**  
JOHN D. WALLACE, Johnsville Naval Air Development Center, Hatboro, Pa.
2. **Relationship Between Chemical Purity and Properties of Barium Titanate**  
JOHN F. MURRAY, Naval Research Laboratories, Washington, D. C.
3. **Effects of Impurities on Electrical Properties of Barium Titanate**  
C. W. PULVARI, Catholic University, Washington, D. C.
4. **Effects of Particle Size and Size Distribution on Physical Properties of Barium Titanate**  
KENNETH G. SKINNER, Naval Research Laboratories, Washington, D. C.
5. **Some Causes and Effects of Other Phases on Barium Titanate**  
JOHN F. MURRAY, Naval Research Laboratories

Friday Afternoon, September 27

2:00—Session on Ferroelectric Ceramics

*Session Chairman:* E. J. SMOKE  
School of Ceramics, Rutgers University

6. **Some Effects of the Replacement of Lattice Elements by Foreign Ions in BaTiO<sub>3</sub> and PbZrO<sub>3</sub>-PbTiO<sub>3</sub> on Aging Characteristics**  
N. A. TERHUNE and J. J. CHARLTON, Signal Corps Engineering Laboratories
7. **Properties of Some Less Common Zirconates, Titanates, and Stannates**  
W. J. BALDWIN, Titanium Alloy Manufacturing Division, National Lead Co., Niagara Falls, N. Y.
8. **Alignment of Domain and Polling of Barium Titanate at the Orthorhombic-Tetragonal Transition**  
P. H. FANG, WILLIAM S. BROWER, JR., and S. MARZULLO, National Bureau of Standards, Washington, D. C.
9. **Resistance Time Characteristics of Barium-Strontium, Titanate**  
FIELDING BROWN, Sprague Electric Co., North Adams, Mass.,

VOL. 36, No. 9 (1957)



# Those Were The Days...

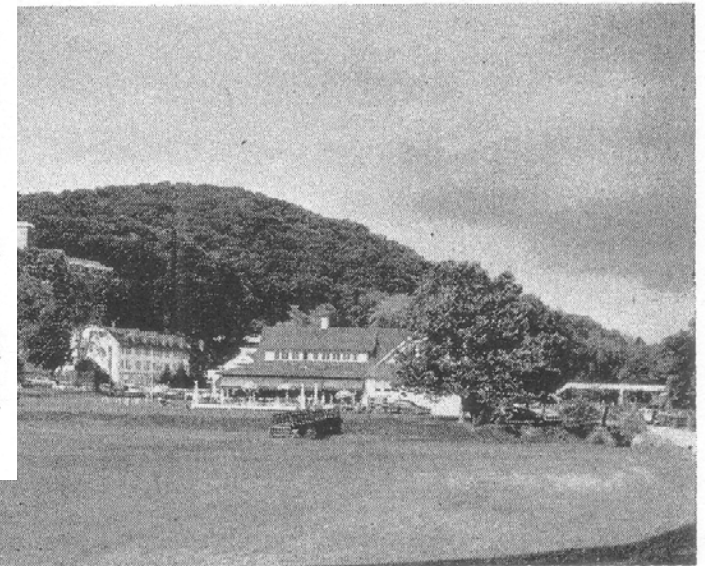
Entertainment Thursday evening will include a moving picture and bingo games in Convention Hall, followed by dancing in the Ballroom.

Ladies will have a card party Friday afternoon, with prizes in bridge and canasta. Arrangements will be in charge of Mrs. Lyle A. Holmes, Mrs. Charles S. Pearce, and Mrs. D. V. Van Gordon.

The annual golf tournament will be Friday afternoon, though players may participate at other times by so advising the club pro before starting their official round. Prizes are planned to make the tournament interesting to golfers and dubs alike. Henry Sulens is in charge of the tourney.

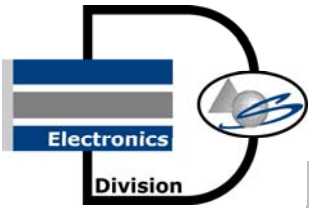
The annual banquet, Friday evening, will conclude with the awarding of prizes for the golf tournament and the card party.

An old-fashioned "hoe down" with square dancing to a hill billy orchestra will follow the banquet. Square dance and country style costumes will be the order of the evening.



Club House at Bedford Springs golf course

VOL. 36, No. 8 (1957)



## Programs Ready for Pittsburgh Meeting

Two “firsts” will be a part of the 60th Annual Meeting of The American Ceramic Society when it meets in Pittsburgh on April 27–May 1.

These will be in addition to celebrating the 60th anniversary of the Society’s first inception in Pittsburgh, in 1898.

### **First Meeting of the Electronics Division**

The newly created Electronics Division will have its first technical sessions and business meeting as a part of the Society’s Annual Meeting. Previously the electronics men have met several times in concurrent sessions as a part of the White Wares Division. Chairman John Koenig and W. W. Coffeen, who are in charge of the program, promise five strong technical sessions for the start of the new Division.

# Plan for 60th Annual Meeting



Pittsburgh's "Golden Triangle," where the Allegheny and Monongahela rivers join to form the Ohio. New skyscrapers and a park are replacing the industrial district that formerly occupied this area.

This will be the first meeting of the newly formed Electronics Division, as authorized by the Board of Trustees at its December meeting. The program is in charge of William W. Coffeen of Metal & Thermit's Research and Development Laboratories, Rahway, N. J. The Division chairman is John H. Koenig of Rutgers University.

# The Pittsburgh Meeting, 1958



Mellon Square Park, across the street from Penn-Sheraton Hotel. An underground parking garage is beneath the square.

## Registration and Function Fees

This year's registration fees will be the same as those at last year's meeting: member registration \$15; non-member registration \$25; student member registration \$8; ladies registration \$8. There will be no charge for admission to the Reception on Sunday evening, nor for the Pittsburgh Night events at the Syria Mosque, including bus transportation to and from the Mosque.

Your badge will be sufficient identification for all functions of the 60th Annual Meeting, except for luncheons, tours, plant trips, Pittsburgh Night events, and the banquet, for which tickets will be required.

## Court Order Protects "Porcelain Enamel"

Protection for the term "porcelain enamel" against similar terms intended to mislead the public has been provided in a recent decision of the United States Court of Appeals in review of a ruling by the Federal Trade Commission.

The Commission's definition of porcelain enamel is: "A substantially vitreous or glassy material fused to the surface of a metal." On that basis it issued a cease and desist order against a company that had been describing its products as "porcename." As the material so described was not truly porcelain enamel the use of the term was misleading to a substantial portion of the public, the Commission ruled, and the ruling was upheld by the court.

This court decision is a precedent for use in safeguarding the good will and reputation that porcelain enamel has built up, it is pointed out by John C. Oliver, managing director of Porcelain Enamel Institute. The PEI has carried the fight in this case during the past two years. Mr. Oliver urged that members of the industry send examples of other possible violations to the PEI office in Washington, D. C.

At the same time Mr. Oliver indicated that serious doubt exists as to the accuracy of using "porcelain" alone in describing a porcelain enamel finish.





# 60th Annual Meeting

## Registration and Function Fees

<i>Event</i>	<i>Price</i>
Registration	
Non-Members	\$25.00
Members	15.00
Student Members	8.00
Ladies	8.00
Reception	No Charge
Pittsylvania Party	
Dinner	No Charge
Variety Show	No Charge
Dance	No Charge
General Banquet	\$ 6.00

206

## Pittsylvania Party

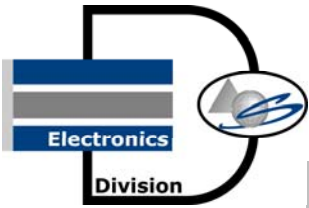
The Pittsburgh hosts have dipped into history to select a name for the Monday night round of entertainment. They relate that the name "Pittsylvania" was once proposed as the name of a state that would have centered around Pittsburgh. Some of the early English settlers in that area wanted to establish it as another state in the Union, carving it out of what has now become western Pennsylvania, western Maryland, northern West Virginia, and a slice off eastern Ohio.

As all events will be in the Syria Mosque, more than three miles from the Penn-Sheraton hotel, buses will be provided, with loading to begin at 6 p.m. Serving of the dinner will begin upon arrival of the first guests, and continue until after 8 o'clock.

The annual variety show, beginning at 9 o'clock, will be presented in the auditorium above the dining hall, the opera style hall with two balconies assuring good seats for all.

An orchestra will provide music for dancing following the dinner, and again after the variety show.

Ceramic school alumni, faculty, and students are being assigned tables at the dinner, where they can get together for their annual reunions. Tom Carnahan is in charge of making arrangements for the school tables.



# Pittsburgh and Society History

- The society was formed in Pittsburgh in the old Monogahela house at the corner of Smithfield St. and Ft. Pitt Blvd.
  - In 1958, the 60<sup>th</sup> anniversary of the society was commemorated with a photosensitive glass plaque placed in the building in this location.
  - Annual night of fun – “Pittsylvania Party” – buffet dinner, big floor show, and dance.
  - Grew out of the National Brick Manufacturers Association, the poor reception accorded to a scientific paper, and the snow!
- The program contained:
  - Substantial information on Pittsburgh and its history
  - A directory of dining, sightseeing, entertainment, travel aids, and places of interest
- The Pittsburgh Section – the first, oldest and largest section and more than 1/5 of the charter members



# 60<sup>th</sup> Annual Meeting

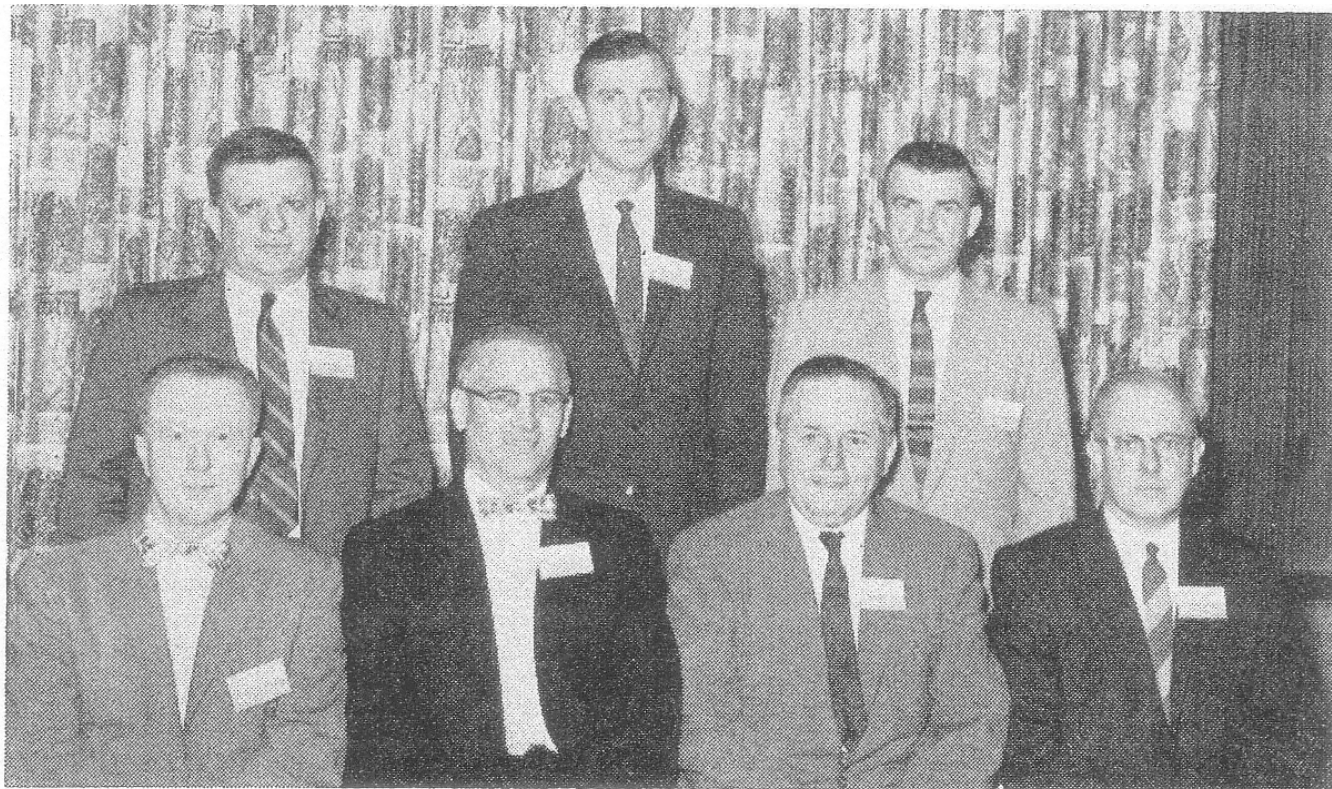
## 60th Annual Meeting Schedule The American Ceramic Society

	Saturday April 26	Sunday April 27	Monday April 28	Tuesday April 29	Wednesday April 30	Thursday May 1
<b>Morning</b>	Ceramic Educational Council	Registration Begins	General Session Registration	Division Sessions Registration	Division Sessions Registration	Plant Trips
<b>Luncheon</b>	Ceramic Educational Council					
<b>Afternoon</b>	Ceramic Educational Council	Natl. Inst. of Ceramic Eng. ... Student Speaking Contest Prelim. Registration	Division Sessions  Registration	Division Sessions  Registration	Division Sessions  Registration	
<b>Dinner</b>			Dinner Floor Show Dance	Banquet		
<b>Evening</b>		Student Speaking Contest Finals ... Reception		Dance		



# Some Meeting Highlights

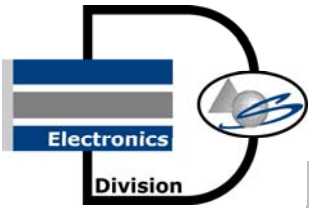
- The local section published a 51 page brochure for the attendees.
- The meeting was held here in Pittsburgh
- A regular program of scientific papers, technical discussions, business meetings and entertainment.
- 2471 attendees; the largest gathering of ceramists in the world.
- The Orton Lecture – “Meteorites, Satellites, and Ceramics” was presented by Dr. John Rinehart from the Smithsonian Institute
- 30 papers from Electronics
- 37 papers from Whitewares



These officers and committee chairmen of the new Electronics Division were present when the Division held its first business meeting at the close of the Tuesday morning session. Left to right they are:

Seated—Paul N. Russell, secretary; William W. Coffeen, program chairman; John H. Koenig, Division chairman; Edward C. Henry, research committee chairman;

Standing—Seymour L. Blum, bibliography chairman; Manville J. Mayfield, standards chairman; Ralph L. Cook, rules chairman.

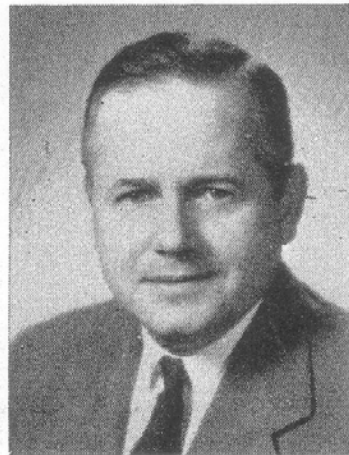


## Formation authorized by the American Ceramic Society Board of Directors

### Electronics Division Officers, 1958-59



Rolland Roup  
Trustee



John H. Koenig  
Chairman



Joseph A. Pask  
Vice-Chairman



Paul N. Russell  
Secretary



## So, Where Did We Go From There?

- The first Division meeting was held Asbury Park, NJ, October 8 - 10, 1958
  - 198 registrants at the meeting
- The second Division meeting was held in Detroit, MI, September 24 - 26, 1959.

# Electronics Division Holds First Fall Meeting

The new Electronics Division had 198 registered for its first Fall Meeting, held at Asbury Park, N. J., October 8-10. The Division was established by the Board of Trustees at its December, 1957, meeting and held its first sessions at the 60th Annual Meeting in Pittsburgh, Pa., in April. Division officers and leaders in getting it started are included in the head table picture at the top of this page.

Next year's Fall Meeting for the Electronics Division will be in Detroit on September 24-26.

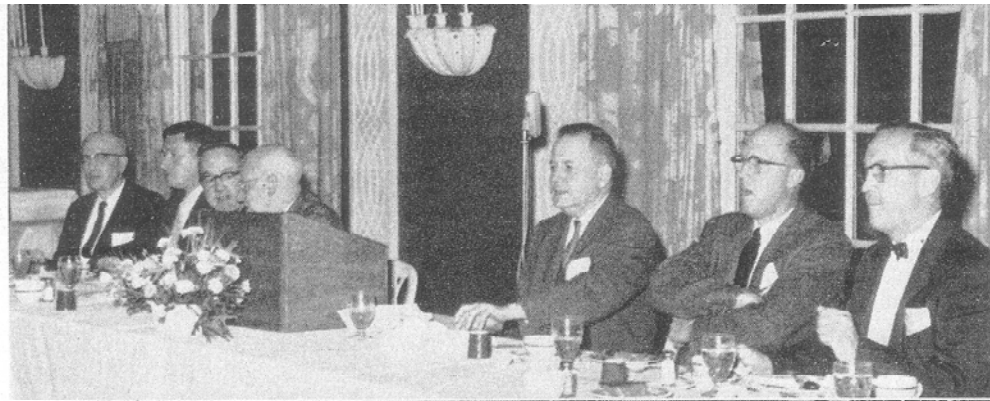
In addition to a heavy schedule of technical sessions there was a tour of the U. S. Army Signal Research and Development Laboratory at Fort Monmouth. Hosts were Col. Leon J. D. Rouge, director of the electronic components research department, and A. W. Rogers, director of electronic parts and materials division. Several of the guides who conducted groups through the laboratories and speakers who described operations in their areas of work were members of The Society.



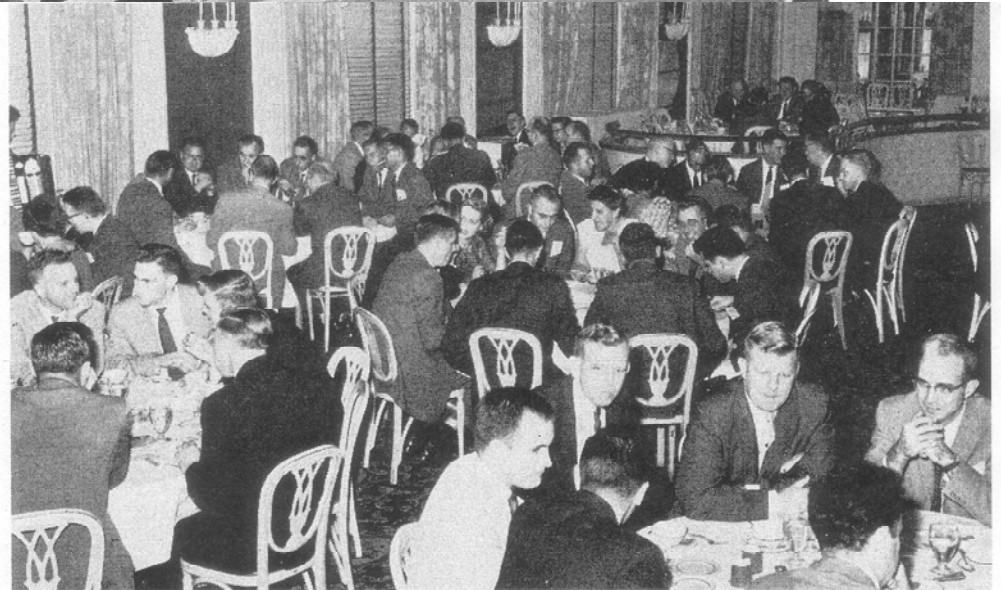


Top—Those at the head table for the informal banquet were: Charles S. Pearce, general secretary; Joseph A. Pask, vice-chairman of the Division; Karl Schwartzwalder, past-president of the Society; Herbert Insley, vice-president; John H. Koenig, Division chairman; Rolland Roup, trustee; and William W. Coffeen, program chairman.

Second—A part of the audience that listened to the papers presented in the technical program.



Bottom—The banquet crowd was in a gay mood, relaxing after a heavy day.



## Electronics Division . . . . . October 9-10

Asbury Park, N. J.

The new Electronics Division will hold its first Fall Meeting on October 9 and 10, at the Berkeley-Carteret Hotel in Asbury Park, N. J. Cooperating with the Division in plans for this meeting is the United States Army Signal Research and Development Laboratory of Fort Monmouth, N. J.

The Berkeley-Carteret is known as a year 'round resort hotel, facing on the Atlantic Ocean in Asbury Park, at Sunset Ave. It offers many forms of sports and entertainment, including a new pool and cabana club.

Asbury Park is an hour's drive south of New York, on the Garden State Parkway and the New Jersey Turnpike. It has an adjoining parking lot. Accommodations are on the American plan.

All events of the Fall Meeting will be held in the hotel, except for the Thursday afternoon visit to the Signal Research Laboratories and Fort Monmouth. Officials emphasize that this visit to Fort Monmouth and the laboratories is restricted to citizens of the United States.

Thursday afternoon, at 4:30, there is to be a meeting of ASTM Committee C-21 Task Group on Titanates-Zirconates, in the Hunt Suite, B & C.

Registration for early comers will start Wednesday evening in the lobby of the Berkeley-Carteret, and resume Thursday morning at 8 o'clock.

Officers of the Electronics Division are: Trustee Rolland Roup of Centralab Division of Globe Union, Inc., Chairman John H. Koenig of Rutgers, the State University, School of Ceramics, Vice-Chairman Joseph A. Pask, University of California at Berkeley, and Secretary Paul N. Russell of General Electric Co.

Thursday, October 9

Technical Session, Crystal Terrace Room. . . . . 9:30 a.m.

Opening remarks by JOHN H. KOENIG, Chairman

Welcome by COL. H. McD. BROWN, commanding officer, United States Army Signal Research and Development Laboratory

### 1-L-58F. Evidence of Four Additional Phase Changes for Cadmium Niobate Above the Curie Point

A. DEBRETTEVILLE, JR., U. S. Army Signal Research and Development Laboratory, Fort Monmouth, N. J.

### 2-L-58F. Properties of Hot Pressed Barium Titanate and Lead Zirconate-Titanate

ARTHUR E. BROWN, ROBERT J. FISHER, and S. DIVITA, U. S. Army Signal Research and Development Laboratories.

Further developments in hot pressing ferroelectric and piezoelectric bodies with ceramic dies are reported. Microstructure and electrical properties of hot pressed barium titanate and lead zirconate-titanate bodies are compared with bodies fired in the conventional manner.

### 3-L-58F. A Review of the Development of the Solid State MASERS

H. D. D. SCOVIL, Bell Telephone Labs, Murray Hill, N. J.

The principle behind MASER amplification is discussed. Solid State MASERS are treated in more detail. Some design considerations and performance characteristics of low-noise, broad-band, traveling-wave MASERS.

VOL. 37, No. 9 (1958)

Friday, October 10

Friday Afternoon

Technical Session, Crystal Terrace Room..... 9 a.m.

Technical Session, Crystal Terrace Room..... 1:00 p.m.

*Session Chairman:* EBERHARD BOTH

U. S. Army Signal Research and Development Laboratories

*Session Chairman:* DANIEL W. LUKS

Star Porcelain Co., Trenton, N. J.

**4-L-58F. Flux Reversal in Square-Loop Ferrites**

E. M. GYORGY, Bell Telephone Laboratories, Murray Hill, N. J.

This subject has received considerable attention because of the increasing use of such processes in logic and memory components in electronic computing systems. This paper presents a survey of present knowledge in that field. Even though the theories are far from complete a relatively consistent picture of the flux reversal process can be given.

**5-L-58F. Magnetic Resonance Studies in the Reaction of Nickel-Cobalt Ferrite**

SEYMOUR L. BLUM and M. H. SIRVETZ, Research Division, Raytheon Manufacturing Co., Waltham, Mass.

A method of determining the reactivity of iron, cobalt, and nickel oxides is discussed in reference to the shape of the ferromagnetic resonance curve.

**6-L-58F. Domain Structure and Optical Properties of Transparent Ferrimagnetic Crystals**

J. L. DILLON, JR., Bell Telephone Laboratories, Inc.

**7-L-58F. Microwave Ferrite Activities at Harvard University**

R. V. JONES, Division of Engineering and Applied Physics, Harvard University, Cambridge, Mass.

A review of the most recent activities in the study and preparation of ferrimagnetic materials is presented. Results of extensive ferrimagnetic resonance studies in yttrium and rare earth garnets in both mono- and polycrystalline forms are discussed. Preparation procedure for the production of high density, low-loss, microwave garnets is also outlined. Brief discussion is given of preliminary resonance studies on various barium-ferrite systems. It is shown that multiresonant patterns may be observed in unoriented ceramics of these materials.

**8-L-58F. Line Width of Yttrium-Iron Garnets as a Function of Sintering Treatment**

L. G. VAN UITERT, Bell Telephone Laboratories, Inc.

**9-L-58F. Compacting of Ceramic and Metal Powders by the Withdrawal Method**

W. A. GORT, Arnhold Ceramics, Inc., New York, N. Y.

**10-L-58F. Ultra Low Loss Ceramic Dielectrics**

M. W. BUNAG and J. H. KOENIG, Rutgers, the State University School of Ceramics, New Brunswick, N. J.

**11-L-58F. The Dielectric Constant of Low Density Ceramic Materials at Microwave Frequencies**

A. J. METZGER, Virginia Polytechnic Institute, Blacksburg, Va.

Measurements have been made of capacitance and other electrical characteristics of porous ceramic materials at frequencies in the microwave range. An attempt is made to account for the observed results in terms of various mixing laws.

**12-L-58F. Low Temperature Sealing Glasses for the Protection of Electronic Components from Moisture**

S. S. FLASCHEN and A. D. PEARSON, Bell Telephone Laboratories, Inc., Murray Hill, N. J.

Development of a broad range of chemically durable, low melting glasses among the heavy metal sulfide systems opens a new area of hermetic seal techniques for electronic components. The highly covalent nature of the glasses and their high fluidities below 300°C. permits application to the sealing of a large number of devices with temperature and moisture or ionic sensitivity.

Chemical, physical, and electrical properties of a series of representative glasses are given and their application to the hermetic sealing of semiconductor devices is discussed.

**13-L-58F. Concepts Involved in Determination and Control of Properties of Ceramic Parts**

W. F. LAWRENCE, Electron Tube Division, Radio Corporation of America, Harrison, N. J.

Will discuss the various types of ceramics used in the electronic industry, showing how their usefulness is related to the properties of raw materials in their compositions. Emphasis will be on the



# Symposium on Piezoelectric Ceramics

E. C. HENRY

Electronics Laboratory, General Electric Co., Syracuse, N. Y.

Approximately 150 persons, representing industrial and research interests "from coast to coast," attended the Twenty-sixth Symposium on Ceramic Dielectrics, held at Rutgers University, New Brunswick, N. J., on February 20. The meeting was co-sponsored by the Rutgers School of Ceramics and The American Ceramic Society. Karl Schwartzwalder, president of The Society, presided.

The program of five papers was built around the subject "Piezoelectric Ceramics." The conference was arranged and scheduled by Prof. E. J. Smoke, of Rutgers, with a view to recognizing the widespread interest in methods of manufacture, applications, and characteristics of barium titanate, lead zirconate-titanate, and lead metaniobate types of ceramics.

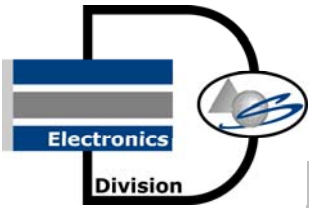
I. T. G. Kinsley, Sandia Corporation, Sandia Base, Albuquerque, N. M., discussed "Some of the Things That Are Known and Some That Should Be Known About Piezoelectric Ceramics." He described the development of Sandia Corporation's interests in piezoelectric titanate and zirconate compositions. Over the past four or five years, Sandia's applications and operating conditions have changed, and the materials available have been improved.

II. "Properties of Piezoelectric Lead Titanate-Lead Zirconate Ceramics" by Donald Berlincourt, Clarence Cmolik, and Hans Jaffe, Clevite Corporation, Cleveland, Ohio, was presented by Berlincourt.

The high Curie point of lead titanate-lead zirconate ceramics extends the useful range of transducer materials. Clevite material now has planar coupling coefficient greater than 0.50 from  $-80^{\circ}$  to  $160^{\circ}\text{C}$ ., above which it drops slowly, still amounting to 0.39 at  $280^{\circ}\text{C}$ .

Properties of several compositions, such as 52 mol % lead zirconate - 48 mol % lead titanate, 53-47 and 54-46, were described in similar detail.

In general, total ferroelectric charge may be determined by three methods: (1) reading remanent polarization or saturation polarization from the hysteresis loop; (2) heating the material through the Curie temperature; or (3) subjecting the material to compressive axial stress.

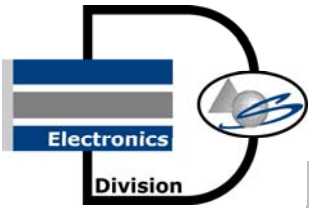


# Some Things Haven't Changed

- “No action of obligation of a section shall be considered an action or obligation of THE SOCIETY”
- Student speaking contest on Sunday
- Business meetings on Tuesday
- Humor is still the same



“Grace, John is a ceramic expert... he'll be glad to lay your tile free, won't you, John?”



# Acknowledgments

## Special thanks to:

- Geoff Brennecka and Amanda Young for their work on the 50<sup>th</sup> anniversary flier.
- Marcia Stout for her support throughout the years and providing historical items.