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Dr. Charlotte Moore Sitterly

ARCS & SPARKS — June 1969 Issue

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ROY J. CELLICH
Ultra Carbon Representative

If you are located in Virginia or the Western half of Pennsylvania, this is your man. Roy joined Ultra last winter. Many of you met him at the Pittsburgh Conference. Roy was born in Pittsburgh, March 9, 1927. He attended grade and high school in Trafford, Pennsylvania. Receiving a BS degree in Chemistry from Slippery Rock State College, he went on to take graduate chemistry courses at the University of Pittsburgh, Western Reserve University and special advanced chemistry courses at American University, Washington, D.C. Roy makes his headquarters at Murrysville, Pa., with his wife, a former teacher, and two sons. Outdoor enthusiasts, the Cellichs spend their weekends swimming, hiking and skiing at the Seven Springs resort area where they have a cottage. You may contact Roy by writing, Box 185, Murrysville, Pa., 15668 or call 412-327-0934.

1969 SAS PRESIDENT, DR. C. L. GRANT

Dr. C. L. Grant is a native of New Hampshire. He received his undergraduate education in Chemistry at the University of New Hampshire, graduating in 1951. After one year of secondary school teaching, he returned to UNH as a Chemistry Instructor. In 1956, he was awarded the M.S. degree in Chemistry at UNH. In 1957, he became Research Assistant Professor in the Engineering Experiment Station at UNH. He left for Rutgers University in 1958 and was awarded the Ph.D. in 1960. After one year as an Associate Professor at Rutgers, he returned to the Engineering Experiment Station at UNH. In 1963, he was promoted to Research Professor and Adjunct Professor of Chemistry with responsibility for the chemical activities of the Experiment Station.

He has geen the author or co-author of 25 papers, two chapters in texts, and has presented approximately 50 talks at professional meetings. In addition to his work in spectroscopy, he has actively promoted the use of statistical techniques in analytical chemistry and related fields.

Society for Applied Spectroscopy activities in the New England Section include Counselor (2 years), Delegate or Alternate (several times), Treasurer (1965-66), Vice President and Program Chairman (1966-67) and President (1967-68). At the National level, he was an SAS Tour Speaker (1964), a member of the Nominating Committee (1965-66), Local Sections Award Committee (1966-67), and President-Elect (1968). In addition to his SAS activities, Dr. Grant has been active in the Society of the Sigma Xi serving as Vice President of the New Hampshire Chapter (1967-68) and President (1968-69). He is also a member of the American Chemical Society, the Spectroscopy Society of Canada, Alpha Chi Sigma, and the American Society for Testing and Materials. In ASTM, he has served as Task Group Chairman within E-2 twice and is presently liaison representative to E-11 and a consultant to three other committees.

CHICAGO SAS—PAST OFFICERS' NIGHT

Current President William Baer presented certificates to those pictured:
From left to right — Row 1 — Grace March, Joseph McCafferty, Claude Lucchesi, Guenther C. Grote, and Russell Hansen
Row 2 — Elma Lanterman, Frank Porsche, Jim McGuinness, and Harry Wilson
Row 3 — Irving Bubes, James Paglis, William Baer, E. L. Grove, and John Murphy.
Those not pictured are: Richard Zogg, Amos Lingard, Robert Raesig, Charles Tlapa, Peter Whitcomb, Howard Plagge, Richard Carrigan, Joseph Mariner, Frank Chmielowiec, Carl Olson, James Hussey, I. Leo Kauffman, Robert Smick, Elwin Davis, and Alfred Perkins.

On Tuesday, December 10, 1968 the Chicago Section of the Society for Applied Spectroscopy held a Past Officers' Night to honor some of those who have contributed to the success of the Society.

The Chicago Group is descendent from a group started in 1943 which in 1950 was chartered as the American Association of Spectrographers. The name was changed to the Chicago Section of the Society for Applied Spectroscopy in 1960.

This ISSUE DEDICATED TO

For more than 45 years, Dr. Charlotte Moore Sitterly has kept astrophysicists supplied with laboratory data required for the interpretation of the various spectra of celestial bodies. Recognized as one of the foremost authorities in the world of atomic, spectroscopic and solar spectrum data, Dr. Sitterly's "Atomic Energy Levels" and "Multiplet Tables" are standard references on which other scientists base their work. Much of the understanding of plasma physics (involving hot gases which carry electric charges) and the mechanism of fusion reactions have been heavily dependent upon Dr. Sitterly's compendia of published data. Her influence has been extended to such diverse branches of science and technology as thermonuclear power, ultra high temperature research and space exploration.

Dr. Sitterly served 45 years as a physicist in the Atomic Physics Division of the National Bureau of Standards and is continuing her work in the Office of Standard Reference Data. Her career previous to joining the NBS in 1945 had prepared her well for the work she was to pursue. She credits the late Henry Norris Russell with inspiring her interest in the study of the solar spectrum. For it was under his direction that she worked as a computer at the Princeton University Observatory, immediately on graduating from Swarthmore in 1920. For the next five years she was involved in a large and varied research program, which included studies of stellar evolution, complex atomic spectra and determination of abundances of chemical elements in the stars. She then moved on to the Mt. Wilson Observatory. Here she worked with Dr. Charles E. St. John in research on the Solar Spectrum. She returned to Princeton in 1928 as a Research Assistant. During 1930-31 she earned her Ph.D in Astronomy on a Lick Fellowship at the University of California. Her thesis subject was "Atomic Lines in the Sun-Spot Spectra". Dr. Sitterly was a Research Associate at Princeton University Observatory when she joined the NBS in 1945.

Charlotte Emma Moore was born September 24, 1898, in Ercildoun, Pennsylvania. A love of learning came naturally, for it was a part of the daily routine of the Moore Family. Her mother was a teacher and her father Superintendent of Public Schools in Chester County. Charlotte, along with her brother and two sisters attended the local public schools. Graduating from high school in 1916, she went to Swarthmore College, where she selected mathematics as her major subject. She held a working fellowship, tutoring students and doing substitute teaching to help pay her expenses. Working her way through college did not prevent her from participating in extra-curricular activities, she was a member of the glee club, class hockey team and the student government association. She graduated with BA degree in Mathematics and Astronomy in 1920 and was elected to membership in Phi Beta Kappa. In 1962 Swarthmore awarded her the honorary degree of Doctor of Science. She received her Ph.D. in 1931 from the University of California.

As for education today, Dr. Sitterly feels very strongly that a thorough grounding in the basic subjects is of vital importance. She has said, "The fear of mathematics is a serious handicap to many otherwise well-qualified students. I would urge the secondary schools to limit the duties of the teacher to teaching fundamentals, if we are to survive as a nation. Many of todays students lack the ability to write concisely, clearly, and correctly. They need the discipline afforded by language training, and they need basic training in thinking, such as is developed in scientific studies." There are never enough qualified people to fill the needs for trained workers, and Dr. Sitterly considers American women one of our greatest untapped sources of technical talent. However, she has no illusions about the competitive position of women in the scientific world. "A woman needs a sound education and must work far harder to attain a career status than a man. It requires hard work and perseverance to get where you want to go." But she feels it is definitely worth the effort.

On May 30, 1937, Charlotte married Dr. Bancroft Walker Sitterly, an astronomer, whom she met while working at the Princeton Observatory. Some years ago he retired from his position as Chairman of the Physics Department of the American University, Washington, D. C. and in 1965 became Professor Emeritus. Dr. Charlotte has said that having an understanding husband is another of the necessary requisites for a successful career woman. Theirs has obviously been a combination of marriage and career success. Not only do they share a common interest in "star gazing" but in fine music, gardening and travel. They have traveled to many parts of the world together, not only for the advancement of science, but pleasure too.

Dr. Sitterly has been author and co-author of more than 120 published articles, monographs and books, under her maiden-name, Moore. She has written in collaboration with many of the distinguished scientists of our day, such as Henry Norris Russell, W. F. Meggers, Charles E. St. John and Harold D. Babcock, to name just a few. Her professional integrity, gracious assistance and enthusiasm have earned her the respect of scientists around the world.

DR. CHARLOTTE MOORE SITTERLY

This petite little lady, she is only four foot-eleven, has been the recipient of a great many awards and honors for her distinguished work. In 1937 the American Astronomical Society awarded her the Annie J. Cannon Medal. The one which has a very special place in her memory was given in 1949 when the Royal Astronomical Society of Great Britian broke a 129 year old tradition, by electing her their first woman associate. Founded in 1820, this is one of the world's oldest and most distinguished societies. She was elected in recognition of her outstanding contributions in the fields of astronomy and astrophysics, particularly her extensive compilation of Multiplet Tables and her work in identifying lines in solar and sun spot spectra.

The U.S. Department of Commerce has twice honored her, with the Meritorious Service Award in 1951 and the Exceptional Service Award in 1960. In 1961 the U.S. Government instituted an annual competition to honor federal career women with outstanding records of achievement. Of a total of 25,500 eligible candidates 74 were nominated; six were chosen. Dr. Sitterly was one of those who received the first Federal Woman's Award ever given. In 1966 she was presented the Career Service Award of the National Civil Service League. She was one of seven professional women to receive the Annie Jump Cannon Centennial Medal in 1963, the only one of its kind which will ever be awarded. Many other awards and honors have been bestowed on this distinguished lady since then.

Dr. Sitterly places great emphasis on international cooperation in science. The work of all scientists, no matter what their fields, depends on sharing their findings and theories to aid in further research and study of any given project. Often an idea expressed has led to the opening of a new line of investigation for which the scientist has been searching. This is the challenge, the excitement and the satisfaction, that dedicated scientists like Dr. Sitterly find as they open the door to untried lines of exploration. Such was the suggestion by Dr. Sitterly that technetium might be present in the stars. It was published as a brief technical note and she is credited with this discovery. She still maintains she only "suggested" but it led others to carry the study further. They found technetium present in the spectra of some red stars. Scientists are still puzzled by its scarcity in nature. Perhaps this riddle too will someday be solved by a scientist willing to share his or her theories.

Dr. Sitterly is an active member of a number of national and international scientific societies. She has traveled extensively at home and abroad to further the

coordination of research in science. She is modest about her own contributions. She explains that her studies are dependent upon the work of all investigators in the field. Coordinating their work into the overall project on which she may be working is necessary to bringing it to a correct and final completion.

Dr. Sitterly has been called a "one-woman world data center" for spectroscopic and astrophysical data. Her studies of atoms and molecules present in the solar atmosphere, identification of lines observed in far ultraviolet solar spectra from rockets and orbiting solar observatories, identification of lines observed in the solar and sun-spot spectra as to chemical origin, and her critical evaluation of all this information and so much more, is of a magnitude almost too great to imagine. Further, this vast amount of knowledge has been utilized by scientists around the world in almost every kind of scientific endeavor.

We salute this lovely little lady. Without her continued and outstanding achievements our progress in many scientific areas would be non existent. But — for all of this and most important, she is loved and respected by all who know her.

We at Ultra Carbon considered it an honor and a privilege to have been able to offer this brief biography to the readers of Arcs & Sparks.

20th PITTSBURGH CONFERENCE HIGHLIGHTS — MARCH 2 – 7,

Pittsburgh Conference Officials shown are (left to right): William Hickam, Westinghouse Research Laboratories, Program Chairman; Robert Mainier, Koppers Co., Vice President; Gerald Carlson, Carnegie—Mellon University, President; William Fateley, Carnegie — Mellon University, Exposition Chairman; and Charles McCafferty, Jr., Pittsburgh Plate Glass Industries, Treasurer.

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President 1968: RICHARD T. OLIVER, Alcoa Research Laboratories

1969, CLEVELAND CONVENTION CENTER, CLEVELAND, OHIO

The following pages highlight the major events at the recent conference . . . and . . . what a success it was! Official registration was 6,237, almost a thousand more than 1968. The technical progam consisted of 40 sessions and the presentation of some 295 scientific papers covering a broad range of analytical topics. The Exposition had more than 230 companies exhibiting a vast array of new instruments and laboratory equipment. Technical interest tours were made to eight plants and laboratories. In addition to the exhibits, technical sessions and tours, interesting social events were planned for each evening of the conference, a dinner-theatre party, a buffet and entertainment in the German tradition, with a Thursday evening wine tasting party.

We congratulate the conference committees for the expert job they did in organizing and coordinating these various activities. The comments on the "Pittsburgh-Cleveland Liaison" have been complimentary and enthusiastic from every side. Again — congratulations for a job well done!

COBLENTZ SOCIETY AWARD

Dr. Zerbi was born on May 29, 1933. He graduated with his Doctor's degree in pure chemistry from the University of Pavia (Italy) in 1956. He has been a Research Associate from 1956 to 1960 at the Industrial Chemistry Department of the Polytechnic Institute of Milano, and Visiting Scientist for two years at the Spectroscopy Laboratory of the University of Minnesota, Minneapolis (1960 and 1961). In 1962, on returning to Europe, he was appointed Research Associate of the National Research Council of Italy at the Polytechnic Institute of Milano. Since then he has been a guest scientist at the Spectroscopy Laboratory of the National Bureau of Standards, Washington, D.C. during 1964. In 1965 he was made Head of Research of the National Research Council of Italy and now is Director of the Institute of Macromolecular Chemistry of the National Research Council of Italy in Milano. He has also served as Lecturer in Structural Chemistry at the University of Pisa in 1966, 1967 and 1968. Dr. Zerbi earned the Coblentz award for his outstanding work on the vibrational analysis and molecular dynamics applied to small molecules and polymers.

The Coblentz Award, made annually, is given to a young scientist whom the Coblentz Society considers to have made the most valuable contribution to the field of infrared spectroscopy before reaching the age of 36. Previous recipients of this award are:

Dr. John Overend (University of Minnesota) in 1964.

Dr. W. G. Fateley (Mellon Institute) and

Dr. R. G. Snyder (Shell Development) in 1965,

Dr. Edwin D. Becker (National Institute of Health) in 1966,

Dr. P. J. Krueger (University of Calgary) in 1967,

Dr. John T. Hougen (National Bureau of Standards) in 1968.

Dr. Giuseppe Zerbi (right) receiving the Coblentz Society Award from Dr. Freeman F. Bentley, Society president, at the Coblentz Symposium held at the 1969 Pittsburgh Conference in Cleveland, Ohio.

PITTSBURGH SPECTROSCOPY AWARD TO DR. VELMAR A. FASSEL

Dr. Fassel received his B.A. degree from Southeast Missouri State College and his Ph.D. degree from Iowa State University in 1947. He has been associated with Iowa State University since 1942 and is now Professor of Chemistry as well as Senior Scientist and Section Chief in the University's Institute for Atomic Research. Both the Optical Society of America and the American Association for the Advancement of Science have elected Dr. Fassel to Fellow Membership. He was awarded the 1964 Annual Medal Award of the Society for Applied Spectroscopy and the 1967 Chicago Section Award of the Society for Applied Spectroscopy.

Dr. Fassel is the author of 95 publications on spectroscopy and analytical chemistry. He served as co-editor of Spectrochimica Acta from 1952 to 1965. He is currently Secretary of the IUPAC Commission on Spectrochemical and Other Optical Methods of Analysis and a member of the Joint Commission on Spectroscopy, International Council of Scientific Unions.

The award was presented by Mr. J. K. Scanlon, Chairman of the Spectroscopy Society of Pittsburgh, at the 1969 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, March 2-7. The testimony on the scroll presented to Dr. Fassel is attached.

Mr. Scanlon (left) Chairman of the Spectroscopy Society of Pittsburgh presented the award to Dr. Fassel.

A Summary of the Award Address by Dr. Velmer A. Fassel on "New Developments On Analytical Applications Of Induction-Coupled Plasmas"

Recent publications have discussed the potentialities of induction-coupled plasmas as excitation sources for analytical emission spectroscopy. In general, the capabilities of these plasmas for the determination of trace elements in solution were superior to those obtained with plasma jet devices but only small improvements in powers of detection over those observed in chemical flames or microwave excited plasmas were realized. Continued investigations by George Dickinson, graduate assistant working with Dr. Fassel, have demonstrated that vast improvements in powers of detection may be achieved through effective utilization of plasma properties and in techniques for introducing nebulized sample into the plasma.

In the simplest terms, the plasma and solenoid inductor or load coil can be thought of as a transformer, the solenoid being an n-turn primary and the plasma a one-turn secondary. The introduction of sample material changes the electrical character of the plasma and thereby the effective impedance of the load coil. This results in a decrease in power transferred to the plasma, causing instability or extinguishment unless counteracting measures are applied. Either the power input to the radio-frequency generator may be increased or the change in the load coil impedance may be counterbalanced. This impedance matching technique was conveniently achieved by employing a remote load coil coupled to the radio-frequency generator through a variable capacitor. Appropriate tuning of the variable capacitor compensated for the impedance mismatch and permitted the introduction of aqueous sample aerosol into the plasma at a rate of approximately 0.3 ml/min.

Several investigators have called attention to the difficulties encountered in introducing aerosols or powdered samples into high temperature plasmas. These difficulties are readily apparent with induction-coupled plasmas as well because solid particles may be observed to simply reflect from or to pass along the outer surface of the plasma as shown in Figure 1. The skin depth effect of induction heating may be turned to good advantage in improving this situation. Skin depth is defined as the depth of penetration into a conductor of 1/e ($\sim$37%) of the inductive current and is inversely proportional to the square root of the generating frequency. Thus, as the frequency is increased, the eddy current flows in a more confined path closer to the outer circumference of the plasma. In this way a toroidal shaped plasma (see Figure 1) may be formed. The cooler "doughnut hole" entry provided by this configuration presents far less resistance to the injection of aerosol particles into inner regions of the plasma. Injected sample particles are thus contained in an axial channel through the center of the plasma. Both the generating frequency and the flow velocity of the argon stream which injects the entrained

(Continued on Page 10)

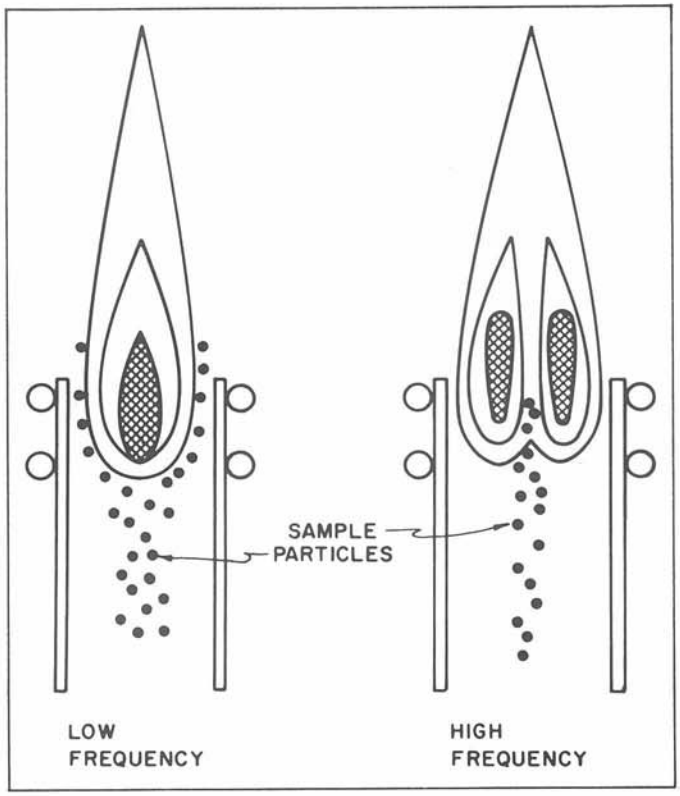

Figure 1. Aerosol entry into uniform vs. toroidal shaped plasma.

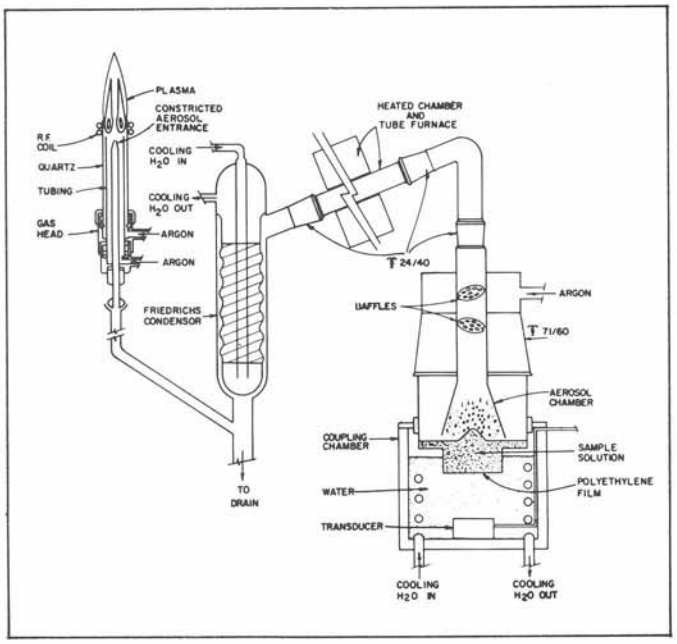

Figure 2. Schematic of ultrasonic aerosol formation, aerosol de solvation, and plasma excitation facility.

TABLE I. MEASURED DETECTION LIMITS, µg/ml

Element	Wavelength A**	Position mm Above Load Coil	Plasma* Emission	Flame Emission	Atomic Absorption	Stabilized Arc or Plasma Jet	Microwave Plasma
Al	3961.5	30-45	0.002	0.01	0.1	0.1	0.03
As	2288.1	5	0.1	6	0.5	-	4
B	2497.7	5-10	0.03	0.3(BO)	6	0.05	0.03
Ba	4554.0	20-30	0.0001	0.002	0.1	0.3	1
Cd	2288.0	5-15	0.03	2	0.001	0.4	0.5
Ce	4186.6	25	0.007	10	150	-	20
Co	3453.5	35-40	0.003	0.05	0.007	3	-
Cr	3578.7	25-30	0.001	0.005	0.005	0.05	-
Fe	3719.9	40-45	0.005	0.05	0.01	0.14	0.5
Hf	3399.8	20-30	0.01	75	15	-	-
La	4086.7	20-30	0.003	0.1(LaO)	8	-	-
Ni	3524.5	30-50	0.006	0.03	0.01	1	0.3
P	2535.6	5-10	0.2	3(PO)	-	1.1	100
Pb	4057.8	35-45	0.008	0.2	0.01	4	1
Sb	2598.1	15-25	0.2	1.5	0.2	-	0.6
Sr	4077.7	25-35	0.00002	0.0002	0.01	0.07	-
Th	4019.1	25-30	0.003	150	-	-	4
V	4379.2	10-45	0.006	0.01	0.02	0.2	0.1
Zn	2138.6	5-10	0.009	50	0.002	0.3	0.1
Nb			0.01	0.7	2	-	-
Ta			0.07	4	6	-	-
Ti			0.003	0.03	0.1	-	-

*Concentration required to produce a line signal two times greater than background fluctuation.

**Wavelengths used were not always those used for results shown in columns 5-8.

Dr. FASSEL SUMMARY *(Continued)*

aerosol into the plasma affect the degree to which the toroidal shape is developed. As a consequence, considerable control may be exercised on the thermal environment experienced by the sample aerosol during its transit through the plasma. The vastly improved powers of detection reported in this paper were obtained at a generating frequency of 30 MHz and an argon flow of 1.7 l/min through the injection orifice.

A limitation in induction-plasma excitation has been the necessity of employing low aerosol feed rates into the plasma. Commonly employed feed rates have been in the 0.1-0.2 ml/min range. This limitation is a consequence of a "poisoning" action from the molecular gases of the evaporated sample solvent. These molecular gases not only cause an impedance mismatch but also absorb energy from the plasma for their excitation and dissociation. The energy available for the plasma-sustaining ionization of the argon support gas is therefore diminished. Unless additional power from the radiofrequency generator is supplied, the plasma becomes unstable and extinguishes as the molecular gas concentration is increased.

Another approach to overcoming this limitation is desolvation of the sample aerosol. The aerosol desolvation facility is illustrated in Figure 2 along with the ultrasonic aerosol generator. Veillon and Margoshes have recently described a similar system employing pneumatic nebulization.

The observed detection limits of a representative list of elements and lines measured are summarized in Table I and compared with data reported in the literature for various other excitation sources and flame atomic absorption. Comparison of these values reveals superior detectability in the induction-coupled plasma for almost every element investigated. Note that in all cases – except for Cd – plasma detection limits are equivalent or greatly superior to atomic absorption values. For Ce, the factor difference is 20,000; for Th, the factor is not even calculable.

Of particular interest are the results for the elements which form exceptionally stable monoxides, notably B, Ce, La, Hf, Nb, Ta, Ti, and Th. With the desolvated aerosol in the Ar supported plasma there is little likelihood for these molecules to form or exist. The oxygen rich environment in flames, however, is conducive to the formation of these molecules. Thus it is not surprising that detection limits for these elements in the plasma are one to four orders of magnitude superior than flame atomic absorption values. Other elements possessing stable monoxides should show similar behavior.

The relative freedom from matrix effects or chemical interferences is another important advantage of the induction-coupled plasma over conventional spectroscopic sources. The potential applicability of the plasma to the direct quantitative analysis of both liquid and powdered samples presage an increasing application of the plasma to the determination of trace elements.

WILLIAM F. MEGGERS AWARD

The award was presented by L. to R. — A. J. Mitteldorf, Pres. Spex Industries and Dr. C. L. Grant, Pres. SAS. Award recipients are Drs. Michael L. Parsons and James D. Winefordner. See story following:

On March 4, 1969, at the Pittsburgh Conference in Cleveland, the 1967 William F. Meggers Award was presented by Dr. C. L. Grant, President of the Society for Applied Spectroscopy, and Mr. A. J. Mitteldorf, President of Spex Industries, Inc., to Drs. Michael L. Parsons and James D. Winefordner. This award, originally called the Journal Award and sponsored since its inception seven years ago by Spex Industries, Inc., recognizes the outstanding paper published in Applied Spectroscopy during each calendar year. In order that the award should be a fitting tribute to Dr. William F. Meggers, it is appropriate to review the highlights of his career.

William F. Meggers was born in 1888 in Wisconsin. After a highly successful primary and secondary education, he received a tuition scholarship to Ripon College, from which institution he received a bachelor's degree in 1910 with his major in Physics. In 1914, he joined the National Bureau of Standards as a Laboratory Assistant. By studying on a part-time basis, he obtained the M.S. degree from the University of Wisconsin in 1916 and the Ph.D. from Johns Hopkins University in 1917. He became Chief of the Spectroscopy Section of the National Bureau of Standards in 1919, a position he held until he retired in 1958. Actually, he did not retire in 1958; he only changed titles. He continued an active research program until shortly before his passing in 1966.

On December 16, 1966, a memorial service, commemorating his distinguished career in spectroscopy, was held at the National Bureau of Standards. At that service, Dr. Paul Foote said, "The friends and relatives of William F. Meggers are gathered here for a memorial service in his honor. These are usually solemn occasions. But Bill would have preferred this meeting to be a sym-

posium on the present status of atomic spectra. He would have been especially pleased if an announcement were made that funds had become available for more personnel to continue important work upon which he was engaged." We all hope that Dr. Meggers would also be pleased with our humble attempt to advance the field to which he contributed so much.

The William F. Meggers Award for 1967 was presented to Drs. Michael L. Parsons and James D. Winefordner for their paper entitled "Optimization of the Critical Instrument Parameters for Achieving Maximum Sensitivity and Precision in Flame-Spectrometric Methods of Analysis."

By way of biographical information, Dr. Parsons was born in Oklahoma City in 1940. He attended Austin College for three years with an honor award and spent his senior year as a National Science Foundation undergraduate Research Fellow at Kansas State College, receiving the bachelor's degree in 1962. His M.S. was received from the same institution in 1963, and his Ph.D. from the University of Florida in 1966 where he worked under Dr. Winefordner. This association resulted in the publication of nine journal articles. Dr. Parsons worked for Phillips Petroleum Company in Bartlesville, Oklahoma for a year and then assumed the position of Assistant Professor of Chemistry at Arizona State University where he is presently located.

Dr. James D. Winefordner received his B.S., M.S. and Ph.D. degrees in Chemistry from the University of Illinois in 1954, 1955 and 1958, respectively. His research advisor was Professor H. V. Malmstadt. After one year as a Post Doctoral Fellow at the University of Illinois, he was appointed Assistant Professor of Chemistry at the University of Florida. In September 1965, he was promoted to Associate Professor of Chemistry; and in July 1967, he became full Professor at the University of Florida. His research interests include: atomic and molecular emission, absorption and fluorescence in flames and other hot gases; molecular fluorescence and phosphorescence of species in the condensed phase; development of sensitive, selective, accurate methods of trace analysis of metals and molecules in materials based on the above spectroscopic methods; development of sensitive, selective gas and liquid chromatographic detectors; and development of spectroscopic instrumentation for analysis. He has published more than 100 scientific papers and chapters on the above topics. Since Dr. Winefordner has been at the University of Florida, 20 of his graduate students received Ph.D. degrees and 9 more M.S. degrees. He is a member of the American Chemical Society, Phi Lambda Upsilon, Phi Kappa Phi, Alpha Chi Sigma, and the American Association for the Advancement of Science. He is also a new member of the Advisory Board of Analytical Chemistry and on the Editorial Board of Chemical Instrumentation.

When asked what had prompted them to undertake this research, Drs. Parsons and Winefordner indicated a belief that many flame methods were devised with little or no attention to the optimization of important parameters. In this paper, they attempted to provide the description of an approach to the selection of parameters to be optimized and statistical means of optimization. Selection of this paper for the Meggers Award surely indicates that they accomplished their goal.

1969 SUMMER COURSES

June 9-13 State University of New York at Albany

5th Annual Clinic in X-Ray Spectrometry

Registration fee $250.00. For information:

Prof. Henry Chessin, Director
X-Ray Clinic Sunya
State University of New York at Albany
Dept. of Physics
1400 Washington Ave.,
Albany, N. Y. 12203

June 16-20 Catholic University of America

Mossbauer Spectroscopy Institute

Registration fee $130.00. For information:

Dr. Leopold May
Dept. of Chemistry
Catholic University of America
Washington, D. C. 20017

June 17-21 Massachusetts Institute of Technology
23-27

Infrared Spectroscopy Techniques and Applications

For information:

Office of Summer Sessions
Room E19-356 M.I.T.
Cambridge, Mass. 02139

August 18-29 20th Annual Fisk Institute Science Center, Vanderbilt University, Nashville, Tenn.

Four one-week courses in IR, GC and UV-F-AA

Information:

Nelson Fuson, Director
Fisk Institute
Box 8
Fisk University
Nashville, Tenn. 37203

August 19-29 14th Annual Course in Modern Industrial Spectroscopy

Arizona State University

Information:

Dr. Jacob Fuchs, Director
Modern Industrial Spectroscopy
Arizona State University
Tempe, Arizona 85281

PITTSBURGH CONFERENCE

Cleveland, Ohio
March 2 - 7, 1969

L. to R. William R. Hargrove, Dean Decker and Edgar W. Day, all of Eli Lilly & Co.

L. to R. Bill Kennedy, American Cast Iron & Pipe Co., Robert E. Michaelis, NBS, William H. Hickam, Conference Program Chairman, Westinghouse Research Labs.

L. to R. Al Di Leonardi, Kennecott Refg., Dr. Thomas G. Bunting, Chase Brass & Copper Research, Steven D. Taylor, Kennecott Copper Corp.

L. to R. J. F. Shanley, Albany Felt Co., Phyllis Sperber, Martin I. Sperber Co., Bill Edgar, Ford Motor Co., Al Di Leonardi, Kennecott Refg. Co.

L. to R. Robert J. Zieger, Fisher Scientific, Frederich Brech, Fisher Research Lab., Lois Ann Beaver, U. S. Food & Drug Adm., T. H. Clarke, Fisher Scientific.

L. to R. Harold V. Carter, Mobay, New Martinsville, West Virginia, James C. Mortach, Standard Oil of Ohio, Cleveland, Ohio.

L. to R. The retired but still very active William J. Poehlman with Del Hughes, Ultra Carbon Corporation.

L. to R. R. W. Hagy, American Cyanamid, Roy J. Cellich, Ultra Carbon Corp., James B. Green, American Cyanamid.

EASTERN ANALYTICAL SYMPOSIUM

10th ANNIVERSARY

Statler Hilton Hotel, New York City
November 13, 14, & 15, 1968

SAS, New York Section Medal was presented to Willis J. Potts, Jr.
Dow Chemical, Midland, Michigan

Benedetti-Pickler Memorial Award was presented to
Wolfgang J. Kirsten, Royal Agricultural College
Uppsala, Sweden

Editors Note: We are sorry that no photos of the recipients of these awards were made available to us.

L. to R. Charles North, National Lead Co., Bob Carls, Mobile Chemical Co., Dave Nash, Bell Telephone Labs., William Barnett, Perkin - Elmer Corp., Patricia Barnett, George Peterson, Perkin - Elmer Corp., Charles Jedlicka, Lucius Pitkin Co.,

L. to R. Oscar Menis, NBS, Joseph Greenspan, Process Instruments Corp., Joseph Steigman, Polytec Instruments, Theodore C. Rains, NBS.

L. to R. Jim Cosgrove, General Telephone & Electronics, Rudolph Dyck, Sylvania Electric, Bob Patrician, Sylvania Electric.

L. to R. H. Mullin, Ledoux & Co., Dr. A. J. Ahearn, National Bureau of Standards.

L. to R. J. W. Robinson, Louisiana State University, R. S. Vogel, Schlumberger, Co., R. K. Skogesboe, Corneli University, J. Franzen, Dortmund, Germany.

L. to R. J. Franzen, Institute Fur Spectrochemie und Angewandte Spectroskopie, Dortmund, Germany, B. F. Scribner, NBS, Mrs. Sally Scribner, Dr. V. A. Fassel, Institute for Atomic Research and Department of Chemistry, Iowa State University.

L. to R. Dr. B. Greifer, Atlantic Research, Dr. J. L. Johnson, General Motors Research Labs., A. H. Jones, General Motors Research Labs., Loretta Bellotti, Arthur D. Little Co.

L. to R. Morris Slavin, L. Goldrin, American Machine & Foundry Co., Walter Slavin, Perkin - Elmer Corp., Sabina Slavin, Perkin - Elmer Corp.,

Morris Slavin and Nina Loren manned the SAS Booth.

Professor James W. Robinson and his family L. to R. Sandra, Jimmy, Winnie, Jim, Sr. and Linda.

L. to R. Harry Drushel, Humble Oil & Refining Co., F. J. Impastato and Claude Arceneaux both of Ethyl Corp., Prof. Jim Robinson, Program Chairman.

L. to R. Mrs. E. L. Steele, Dr. J. Traynhan, LSU, Mrs. J. W. Robinson, Mrs. Lucy Hudson.

L. to R. Prof. P. W. West, Ken Reisner, Dr. R. H. Müller, all of LSU, Dr. D. W. Steinhaus, University of California, Mrs. Steinhaus, Mrs. West, Mrs. Doris Müller, Dr. E. Vidaurreta, LSU, Dr. D. N. Hume, M. I. T.

L. to R. Howard Bedell, McPherson Instruments, Inc., J. A. Wheat, E. I. duPont & Co., Mrs. Bedell, Dean Huber Williams, LSU.

Lady guests at one of several social gatherings which were held each evening of the four day conference.

Dr. T. C. Rains, U. S. Dept. of Commerce, Prof. & Mrs. Robinson, Dr. D. M. Hercules, M. I. T., F. L. Brech, Fisher Research Labs., Dr. D. N. Hume, M. I. T., Mrs. Steinhaus, Dr. D. W. Steinhaus, University of California.

L. to R. Del Hughes, Ultra Carbon Corp., Mrs. Robinson and D. O. Landon, Spex Industries, Inc.

August 4-5

Albany Hotel, Denver, Colorado – ELEVENTH ANNUAL ROCKY MOUNTAIN SPECTROSCOPY CONFERENCE.

Further information:

Harlan N. Barton
The Dow Chemical Company
P. O. Box 888
Golden, Colorado 80401

ugust 6, 7, 8

Albany Hotel, Denver, Colorado – 18TH ANNUAL CONFERENCE ON APPLICATIONS OF X-RAY ANALYSIS. Sponsored by Metallurgy Division, Denver Research Institute, University of Denver.

Further information:

B. L. Henke, Conference Chairman
Denver Research Institute
University of Denver
Denver, Colorado 80210

Sept. 30, Oct. 1, 2

Mountain View Hotel & Motor Lodge, Gatlinburg, Tennessee – 13TH CONFERENCE ON ANALYTICAL CHEMISTRY IN NUCLEAR TECHNOLOGY. Sponsored by Oak Ridge National Laboratory, Union Carbide Corp.

Further information:

L. J. Brady, Chairman
Oak Ridge National Laboratory
P. O. Box X
Oak Ridge, Tennessee

October 6-10

Disneyland Hotel, Anaheim, California, THE PACIFIC CONFERENCE ON CHEMISTRY AND SPECTROSCOPY. Conference will include SAS Eighth National and Eighth Pacific Meetings and ACS Fifth Western Regional Meeting.

Further information:

George Alexander
Laboratory of Nuclear Medicine – UCLA
900 Veteran Avenue
Los Angeles, California 90024

October 20-23

Holiday Inn Hotel (downtown) Montreal, Quebec, Canada – THE 16TH SPECTROSCOPY SYMPOSIUM OF CANADA.

Further information:

R. A. Burley
16th Spectroscopy Symposium
Noranda Research Centre
240 Hymus Blvd.
Pointe Claire, Quebec, Canada

November 19, 20, 21

Statler Hilton Hotel, New York City – EASTERN ANALYTICAL SYMPOSIUM. Sponsored by SAS and ACS.

Further information:

Richard J. Knauer
Armco Steel Corporation
Advanced Materials Division
P. O. Box 1697
Baltimore, Maryland 21203

Do You Want Your News Published?

Our sincere thanks to those of you who forwarded news items and photos for this issue.

If you have news items, awards or photos which pertain to the SAS and would be of interest to its members, we will endeavor to include them in future issues. Photos should be glossy, no smaller than 3¼ x 4¼, persons in photo should be clearly identified, the event, location and date should be included, please type or print. Photos cannot be returned and the publishers cannot be responsible for incorrect spelling or identification of any item submitted.

Address: Miss Marion M. Tamblyn, Editor
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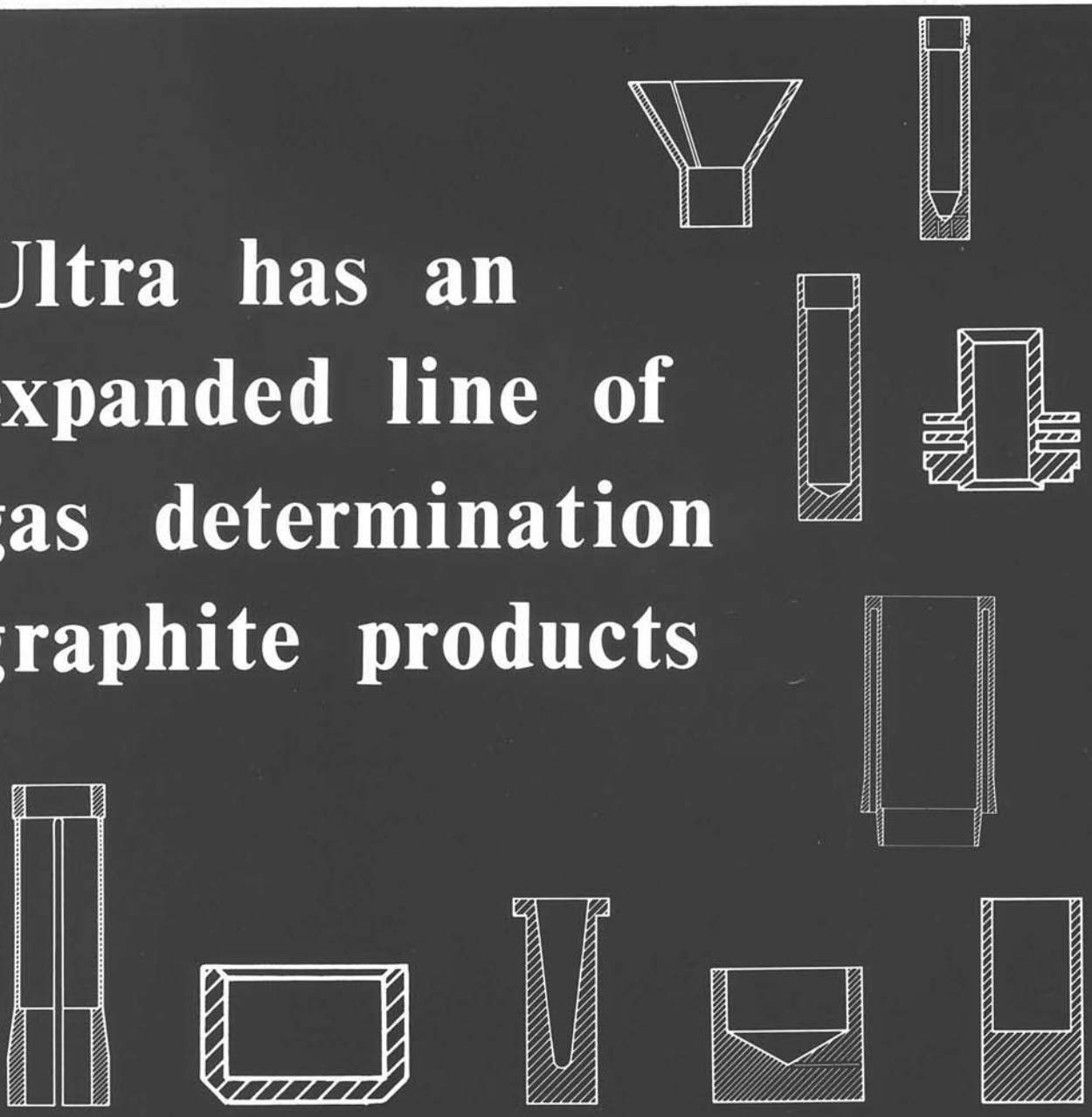

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