

## ANALYTICAL CHEMISTRY Appoints Three New Instrumentation Advisory Panel Members

ANALYTICAL CHEMISTRY has appointed three new members to its Instrumentation Advisory Panel. They are Tomas Hirschfeld, Block Engineering, Cambridge, Mass.; Carter L. Olson, College of Pharmacy at the Ohio State University; and Thomas H. Ridgway, University of Cincinnati.

Members who are leaving the panel after serving three-year terms are Nathan Gochman, Veterans Administration Hospital and University of California, San Diego; Gary Horlick, University of Alberta, Canada; and James N. Little, Waters Associates.

The six members who will continue to serve on the panel are Gary D. Christian, University of Washington; Catherine C. Fenselau, the Johns Hopkins University School of Medicine; Gary M. Hieftje, University of Indiana; Peter T. Kissinger, Purdue University; C. David Miller, American Instrument Co.; and Sidney L. Phillips, Lawrence Berkeley Laboratory, University of California.

The Advisory Panel members lend their expertise to the continued development of interesting and provocative editorial coverage of the interdisciplinary field of instrumentation. They aid both in the selection of subject matter and possible authors and in the development of the scope and aims of the feature itself. Panel members also review material for the feature and sometimes contribute directly as authors or coauthors of articles.

The goal of the instrumentation feature is to help broaden and deepen the reader's knowledge in related disciplines so that cross-fertilization of ideas might provoke original and useful thinking in the area of instrumentation for solving analytical problems. The articles are written by the specialist but directed toward the nonspecialist.

alist. They are not intended to be lengthy review articles but should serve to introduce and promote interest in the subject under discussion. Areas of interest include not only instrument design but also specific applications. Experts in disciplines other than chemistry are often invited as authors when the topic has great potential application to analysis. Although articles are normally invited, unsolicited articles are also considered if the topic is appropriate.

Brief biographical sketches of the new panel members follow.

**Tomas Hirschfeld** is currently chief scientist of Block Engineering, Cambridge, Mass., and a visiting professor at Indiana University, Bloomington. He received his PhD summa cum laude in 1967 from the National University, Uruguay. Dr. Hirschfeld has taught spectroscopy courses at several universities and has over 200 papers or patents in reflection, Raman, fluorescence, and Fourier transform spectroscopy. A Fellow of the Optical Society of America and a senior member of the Institute of Electronic and Electric Engineers, he is also a member of the Editorial Boards of the *Journal of Applied Spectroscopy* and the *Journal of the Optical Society of America*, and editorial advisor to *Optics Letters* and *Applied Spectroscopy*. Dr. Hirschfeld received the IR-100 award in 1975 for development of the CIRA gas chromatographic infrared analyzer and again in 1977 for the Virometer rapid virus detection system. He is a 1978 ACS and Society for Applied Spectroscopy tour speaker, and is the recipient of the 1978 Meggers award from the Society for Applied Spectroscopy.

**Carter L. Olson** is professor of pharmaceutical analysis in the College of Pharmacy at the Ohio State University. In 1956 he received his BS degree from Wisconsin State University, Stevens Point, and his PhD in 1962 from the University of Kansas where he worked under the direction of Ralph N. Adams. He then did two years of postdoctoral research with Walter J. Blaedel at the University of Wisconsin, Madison. Since 1963 Dr. Olson has been on the faculty of the Ohio State University, College of Pharmacy. His research interests include the development of electroanalytical methods for measuring clinically important enzyme reactions, flow-stream spectroelectrochemistry, and methods for measuring membrane transport utilizing two-dimensional vidicon spectroscopy. He is also working on the development of a GEM-SAEC-type multichannel centrifugal analyzer using electrochemical sensors. Dr. Olson is a member of ACS, Sigma Xi, and Rho Xi.

**Thomas H. Ridgway** is assistant professor of chemistry and director of instrumentation at the University of Cincinnati. He received his BS degree from the University of Michigan and his PhD degree from the University of North Carolina under the direction of C. N. Reilley. In 1973-76 Dr. Ridgway was assistant professor of chemistry at Texas A & M University, and in 1976 he joined the Department of Chemistry at the University of Cincinnati. His research interests include electrochemical methods of analysis and the application of mini- and microcomputers to chemical instrumentation. Dr. Ridgway is a member of ACS and the Electrochemical Society.



Tomas Hirschfeld



Carter L. Olson



Thomas H. Ridgway

## Determination of Lithium Levels by AA Spectrometry

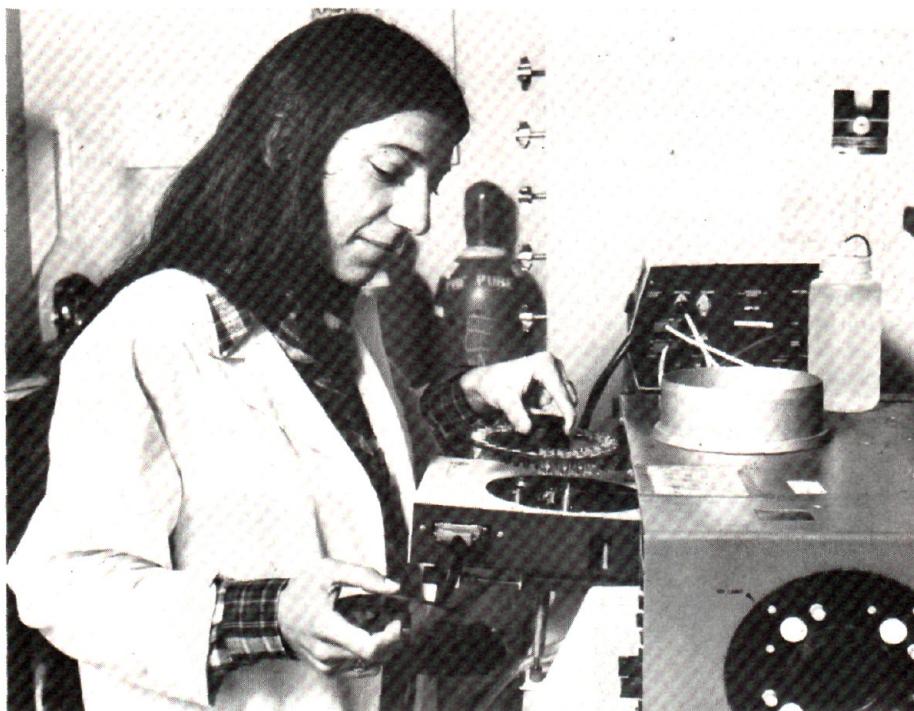
At the University of California's School of Medicine in Los Angeles, researchers are developing an analysis method that will allow clinical laboratories to provide very accurate lithium determinations on blood samples of patients suffering from manic depression. Lithium helps to control manic depression, although the mode of operation is still unknown. The difficulty with lithium treatment is that too great a dosage is dangerous and too little is ineffective. A therapeutic dose might be 1 mmol/L plasma, whereas a toxic dose would be only 2 mmol/L plasma of lithium carbonate. Barbara Ehrlich, a PhD candidate who has been doing research on membrane transport biophysics for the past three years, is analyzing the drug's effect on patients' moods by studying the way lithium affects red blood cells, the rate at which it enters and then leaves these cells, and the change in lithium concentration in the whole body over a 24-h period.

Using a Varian Model 1200 atomic absorption spectrometer in the flameless mode, a carbon rod atomizer (CRA 90), and an automatic sampling device (ASD 53), Ehrlich measures plasma, red cell lithium levels, and lithium movement across the cell membrane with just 10 mL of blood. Using standard methods of analysis would have required 400 mL. Ehrlich

does a minimum amount of preparation to test her blood-lithium samples. First, she separates the plasma from the red cells and then dilutes the plasma and the cells with ammonium nitrate to remove interfering ions. The sample goes into the spectrometer which has a hydrogen enhancement device that helps atomize more lithium by changing the gaseous environment around the sample chamber. In the spectrometer the sample is dried, reduced to ashes to remove any remaining protein and interfering ions, and is atomized into the absorption beam. There is an absorption readout, which Ehrlich converts to lithium concentrations.

Ehrlich found that lithium does affect cell membranes and possibly nerve membranes too. This finding, coupled with other research, suggests a biochemical basis for manic depressive illness. Learning the exact mechanism of lithium's action is important because manic depression is the only psychiatric illness that can be controlled with a specific drug.

Research work of this kind could lead to the development of a spectrometer that would let a clinical laboratory technician tell a doctor exactly how much lithium the patient needs to rapidly achieve a therapeutic response. Because lithium has fewer side effects, it is also being tested as treatment for other medical problems such as premenstrual tension, alcoholism, and explosive personality.



*Barbara Ehrlich is putting blood serum samples into the spectrometer's automatic sampler in preparation for lithium analysis*

## Biotechnology Resource

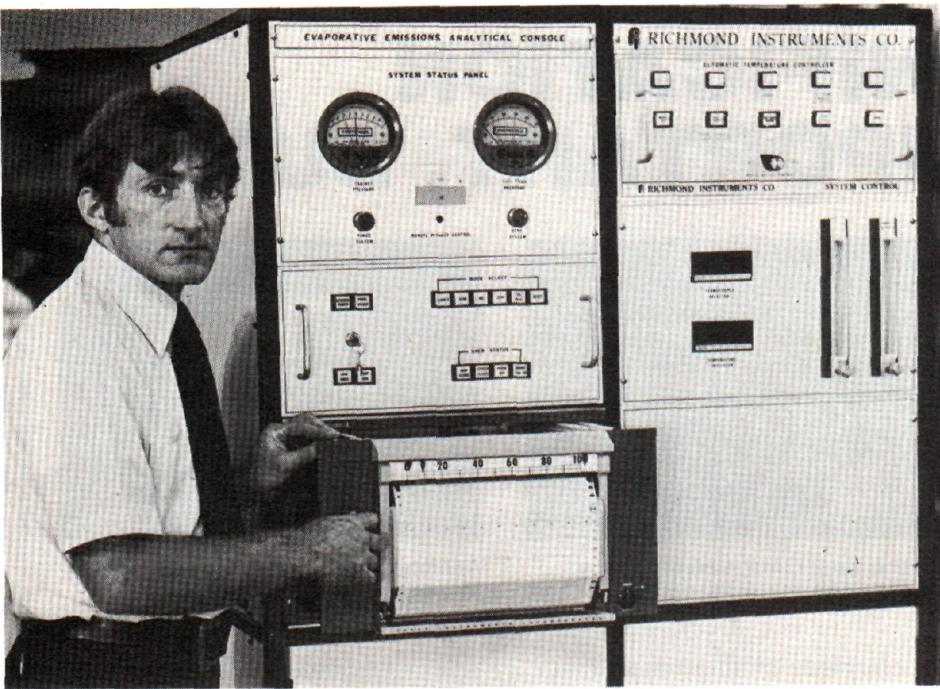
One of the nation's most versatile centers for analyzing complex chemicals is now open for regional and national business in the Biochemistry Building at Michigan State University (MSU). The million-dollar facility is one of seven mass spectrometry laboratories designated as "biotechnology resources" by NIH. It is supported by the NIH's Division of Research Resources and, as such, serves all researchers funded by NIH. Although the MSU facility is considered a regional one, it has certain capabilities that are utilized by researchers from other regions, says Charles C. Sweeley, MSU professor of biochemistry. He and John F. Holland, associate professor of biochemistry, are codirectors of the facility, which was established in 1968 by NIH as part of Dr. Sweeley's laboratory. Recent growth in equipment and use necessitated the move to the new location.

Use of the facility by scientists from other institutions has been numerous and broad. One regular user has been the U.S. Army Laboratories at Natick, Mass., where preservation of food by radiation is being studied. Other off-campus users include researchers from the University of California at Berkeley, Mt. Sinai Medical School in New York, Washington University, University of Texas, University of Minnesota, University of Guelph in Ontario, Vanderbilt University, University of Houston, Johns Hopkins University, and the University of Oklahoma. The facility also trains young scientists in the use of mass spectrometry.

## J. T. Baker Chemical Co. Nobel Laureate Lecture

Yale University's Chemistry Department sponsored the inaugural J. T. Baker Chemical Co. Nobel Laureate Lecture on Nov. 29, 1978. Christian Anfinsen, chief of the Laboratory of Chemical Biology at the Institutes of Arthritis, Metabolic and Digestive Diseases in Bethesda, Md., and Nobel prize winner in chemistry in 1972, delivered the first lecture in a series called "Perspectives for the Future." He spoke on the development of synthetic immunogens and stimulants of the immune response. These investigations promise to yield highly specific agents for the cure and prevention of viral diseases, he said. Dr. Anfinsen summed up his lecture in this way:

*Our current knowledge of the chemical and three-dimensional structures of macromolecules, and the resulting opportunity to interpret biological function in terms of struc-*



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ture, has made possible many exciting new approaches to the understanding of cell function and of human disease and its treatment. We know that large polypeptides, direct one-dimensional translations of genetic information, can fold spontaneously into functional and reproducible geometries. This fortuitous aspect of evolutionary design permits us to undertake the chemical synthesis of enzymes, large hormones, and molecules with receptor or recognition properties. A particularly interesting spin-off of macromolecular chemistry is the development of synthetic immunogens and stimulants of the immune response. These investigations promise to yield highly specific agents for the cure or prevention of viral diseases.

The new Nobel Laureate Lecture Series follows a recent announcement by ACS and J. T. Baker Chemical Co. of a Nobel Laureate Signature Award to be granted to outstanding doctoral candidates in the fields of science and medicine. The award, to be administered by ACS, will include a \$2000 grant to the winner and a plaque bearing the signatures of more than 50 Nobel winners. J. T. Baker's Warren K. Kingsey, chairman of the lecture series, announced the new program and stated, "It is our hope that we may be able to schedule the Nobel Laureate Lecture Series at various major learning centers in the U.S."

### New York Society for Applied Spectroscopy Medal Awardee

Bernard J. Bulkin, dean of arts and sciences and professor of chemistry at Polytechnic Institute of New York, is the recipient of the 1978 New York Society for Applied Spectroscopy Medal. The medal is awarded each year to recognize excellence for research in spectroscopy. Dr. Bulkin has conducted research on infrared and Raman spectroscopy for 12 years and has coauthored more than 40 papers in this area. His major interest is in the spectra of liquid crystals and ordered fluids. A graduate of Polytechnic, he has been dean of arts and sciences for three years. Prior to becoming dean, he was on the faculty of City University of New York. Dr. Bulkin earned a PhD in physical chemistry from Purdue University and did postdoctoral work at the Swiss Federal Institute of Technology. Recipient of the 1975 Coblenz Award, he is a member of the Society for Applied Spectroscopy, ACS, Optical Society of America, New York Academy of Sciences, and the Coblenz Society.

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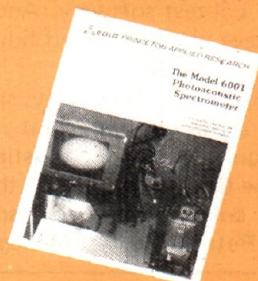
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## News

### 1980 Pittsburgh Applied Analytical Chemistry Award Nominations

This award is sponsored by the Society for Analytical Chemists of Pittsburgh and consists of a \$1000 honorarium given annually for an outstanding paper that was published in the previous five years and had an important impact in the field of applied analytical chemistry. Review papers and papers describing instrument construction are not considered to fall within the scope of this award. Papers published by members of the SACP are not eligible. Nominations for the award may be made by anyone, including the authors. Any paper published between Jan. 1, 1974, and Dec. 31, 1978, is eligible and may be nominated by sending five copies of the nominated paper, no later than June 15, 1979, to: Mr. Robert Mainier, Koppers Co., Inc., 440 College Park Drive, Monroeville, Pa. 15146.

### 15th Benedetti-Pichler Award Nominations

The American Microchemical Society is inviting nominations for its 15th annual Benedetti-Pichler Award. This award is given in recognition of service to microchemistry in its broadest sense, including research, application, administration, teaching, or other means of promoting the advancement of microchemistry. The nominee need not be a member of the society. Nominations, stating the reason for nomination and citing the work of the nominee, should be made in writing and must be received by June 1, 1979. Nominations and requests for further information should be addressed to: Lisa Hallquist, J. T. Baker Chemical Co., 222 Red School Lane, Phillipsburg, N.J. 08865.

## Call for Papers

### Photoacoustic Spectroscopy

Iowa State University, Ames, Iowa. Aug. 1-3, 1979. Sponsored by the Optical Society of America. Contributed papers covering original unpublished work on the meeting subjects will be accepted for presentation. Session topics will cover signal theory for various sample classes and measurement conditions, experimental methods for different types of measurements, and quantitative studies using the technique to characterize various sample properties and processes. Each author must submit a 25-word abstract plus a summary of the presen-

tation of up to four pages including figures, tables, equations, etc. All abstracts and summaries must reach the Optical Society office by Apr. 20, 1979. Authors will be notified whether papers have been accepted by May 18. Send papers to: Optical Society of America, Photoacoustic Spectroscopy Meeting, 2000 L St., N.W., #620, Washington, D.C. 20036. 202-293-1420

### 9th Annual North American Thermal Analysis Society Meeting

Holiday Inn City-Centre, Chicago. Sept. 23-26, 1979. Sessions will include Industrial Applications of Thermal Analysis, Theoretical Aspects of Thermal Analysis, High-Pressure and Combustion Thermal Analysis, Applications of Thermal Analysis to Energy Conservation, New Techniques and Instrumental Advances, and Thermal Analysis of Inorganic, Organic, and Polymer Systems. Send 150-200-word abstracts by Mar. 1, 1979, to: Inez M. Johnston, Electromagnetic Industries, Square D. Co., P.O. Box 6440, Clearwater, Fla. 33518. For more information, contact: Barbara L. Fabricant, Glass Thermochemistry R&D, Owens-Corning Fiberglass Technical Center, P.O. Box 415, Granville, Ohio 43023. 614-587-0610

## Meetings

The following meetings are newly listed in ANALYTICAL CHEMISTRY. The 1979 meetings listed earlier appear in the January issue

■ **Air Pollution Control Association Conference on Quality Assurance in Air Pollution Measurement.** Mar. 12-13. Grand Hotel, New Orleans. Contact: Gus Von Bodungen, Louisiana Air Control Commission, P.O. Box 60630, New Orleans, La. 70160

■ **16th Annual Chicago Chromatography Discussion Group Conference on Gas Chromatography.** Mar. 20-23. University of Illinois, Chicago. Contact: J. B. Himes, Richardson Co., 2701 W. Lake St., Melrose Park, Ill. 60160

■ **National Conference for Control of Hazardous and Toxic Materials in the Environment.** Mar. 21-23. Deauville Hotel, Miami Beach. Contact: B. D. Zucker, Information Transfer Inc., 1160 Rockville Pike, Suite 202, Rockville, Md. 20852

■ **ACS Pentasectional Oklahoma Meeting.** Mar. 24. Stillwater, Okla. Contact: R. D. Freeman, Dept. of Chemistry, Oklahoma State University, Stillwater, Okla. 74074