

Measuring Real Surfaces

The International Union of Pure and Applied Chemistry (IUPAC) Commission on Electrochemistry is seeking comments on a document entitled "Real Surface Area Measurements in Electrochemistry." Knowing real surface areas is important for measuring electrode reaction rates and most double-layer parameters. However, different methods have been proposed, some of questionable value.

The IUPAC document scrutinizes 15 methods, describing the principles and limitations of each approach. A copy of the document is available from the ACS Journals Department, P.O. Box 3330, Columbus, OH 43210. Comments are due by December 31 and should be sent to S. Trasatti, Dipartimento di Chimica Fisica ed Electrochimica, Università di Milano, Via Venezian 21, I-20133 Milano, Italy.

Nominations for Dal Nogare Award

The Chromatography Forum of the Delaware Valley is requesting nominations for the 1991 Stephen Dal Nogare Award for excellence in and significant contributions to the field of chromatography. All nominations should consist of one or more letters of nomination and a biographical sketch describing the nominee's experience and contributions to the field. Nominations from previous years can be renewed and appended with an updated letter. Nominations should be sent to Mary Ellen McNally, E. I. du Pont de Nemours & Co., Agricultural Products Department, Experimental Station, Wilmington, DE 19880-0402. Deadline is April 1.

Polymer Battery

Materials scientists at Lawrence Berkeley Laboratory (LBL) have discovered a unique and promising design for lightweight, solid-state batteries based on a polymer reaction. "These batteries," explains Lutgard De Jonghe, "can be made for all types of uses, from the sustained low-power demands of a watch to the high-power demands of electric vehicles." In addition, they should offer better performance in terms of power, lifetime, and shelf life than any commercial battery now available, and pose no danger of leakage.

Essential to these new batteries are thin-film cathodes containing polydisulfide polymers with the general structure $(-SRS-)_n$. The "R" group, explains Steven Visco, can be almost anything, ranging from aliphatic groups to thiazoles. To date, about 15 different polymers have been tested and about two-thirds of those look promising.

A polymerization/depolymerization reaction stores and generates electrons. Severing the disulfide bonds provides electrons, whereas polymerization recharges the cathode. LBL scientists have successfully run a polymer cathode through more than 350 polymerization/depolymerization reactions with little energy loss in the first 100 cycles.

Because of the low equivalent weights of the monomers, the batteries can deliver a significant amount of power per unit weight. For example, one polydisulfide battery operat-

ing at 80 °C (a reasonable temperature for an electric car) provided 200 W-h/kg, placing it in the range required to propel an electric car for long distances.

The actual polymer cathodes are a composite thin film cast from a solution of polydisulfide polymer, poly(ethylene oxide) (PEO), possibly an electrolyte, and carbon black. "It looks like black plastic," says Visco. An alkali metal anode, generally Li foil, and a PEO-salt electrolyte film complete the battery. The films are either sandwiched flat for button-shaped batteries or wound like a jellyroll for cylindrical designs.

AOAC Nominations

The Association of Official Analytical Chemists (AOAC) invites nominations for two annual awards.

The \$2500 Harvey W. Wiley Award is given to an outstanding scientist or research team for contributions to analytical methodology in areas of interest to AOAC. The award was established in 1956 to honor Wiley, a founder of AOAC and the "father" of the Pure Food and Drug Act. Nominations received before December 1 will be considered for the award during the next four years.

The AOAC Scholarship Award provides \$1000 to support an undergraduate student's fourth year of study in a scientific area of interest to AOAC. Additional qualifications are a B average or better and evidence of financial need. Students in medical and premedical programs are not eligible. Nominating forms are available from AOAC, 2200 Wilson Blvd., Suite 400, Arlington, VA 22201-3301 (phone: 703-522-3032; FAX: 703-552-5468). Deadline is May 1.

For Your Information

Ahmed Zewail has been named the **first Linus Pauling Professor of Chemical Physics** at the California Institute of Technology. Zewail is a pioneer in femtosecond laser techniques for studying chemical reactions.

The **Association of Official Analytical Chemists (AOAC)** has produced the **15th edition of its Official Methods of Analysis of the AOAC**. The handbook, which contains 1800 collaboratively tested and approved methods for chemical and microbiological analysis, is available from AOAC (see address above).

The **National Science Foundation (NSF)** has awarded a total of \$22.7 million in **grants targeted at developing or improving undergraduate laboratory and field experiences**. The funds, which are matched by the receiving institution, can only be used to purchase instrumentation.

In collaboration with Grumman Aerospace and General Dynamics, **Brookhaven National Laboratory will build a new, compact synchrotron**. The facility will aid in the development of X-ray lithography, a novel method of producing computer chips.