



Radoslav Adzic receives 2005 Employee Recognition Award from Brookhaven National Lab. Source: *The Bulletin, Brookhaven National Lab*

### Radoslav Adzic Receives Award from Brookhaven National Lab

RADOSLAV ADZIC, an ECS member since 1995, received a 2005 Employee Recognition Award from Brookhaven National Laboratory (BNL) this past January. Eleven BNL employees were rewarded for their talent and dedication, each winning \$5,000. Dr. Adzic was one of the recipients of the Science & Technology Award, which recognizes distinguished contributions to BNL's science and technology mission over one or more years.

Dr. Adzic, a chemist in the Materials Science Department at BNL, was cited for his world leadership in surface electrochemistry and electrocatalysis. A BNL news release noted that Dr. Adzic's "pioneering contributions to electrocatalysis include demonstrating the catalytic effects of metal

monolayers and using synchrotron tools to study effects of structure on the kinetics of electrocatalytic reactions. From this fundamental research, Adzic made what is recognized among peers as a highly significant breakthrough in fuel cell electrocatalysis by designing the first real platinum monolayer fuel cell electrocatalyst. This novel catalyst consists of ruthenium nanoparticles with a submonolayer of platinum. Dr. Adzic joined BNL in 1992, having also spent three months at the Lab in 1979 as a visiting scientist. He received his B.S. in chemical technology in 1965 at the University of Belgrade, where he also earned his doctorate in chemistry in 1974. ■



### David Lockwood Receives Brockhouse Medal

DAVID LOCKWOOD has received the Canadian Association of Physicists' 2005 Brockhouse Medal for Outstanding Achievement in Condensed Matter and Materials Physics. The award was given for his major contributions to the elucidation of fundamental optical effects in low-dimensional systems, and for his seminal work on the light-emitting properties of porous silicon. Dr. Lockwood, of the National Research Council of Canada, has been an ECS member since 1994. He is also a past chair of the ECS Luminescence and Display Materials Division.

Lockwood was honored with the award at the 2005 CAP Congress this past June. In addition, he delivered one of the plenary lectures at the event. The purpose of the award is "to recognize and encourage outstanding experimental or theoretical contributions to condensed matter and materials physics. While the main criterion for awarding the Brockhouse Medal is the excellence of the research accomplishments, preference is given for recent important advances in condensed matter and materials physics. ■



### Patrik Schmuki Receives NACE H. H. Uhlig Award

ECS member PATRIK SCHMUKI received the H. H. Uhlig Award from NACE International this past April. Dr. Schmuki is currently vice chair of the ECS Corrosion Division. The award recognizes "significant outstanding effectiveness in post-secondary corrosion education at the undergraduate or graduate level, as exhibited by young educators who excite their students through outstanding and innovative teaching in corrosion." Past recipients include B. A. Shaw, J. R. Scully, R. G. Buchheit, Jr., R. G. Kelly, A. J. Davenport, and G. S. Frankel; all members of ECS and active in the Society's Corrosion Division.

Dr. Schmuki is currently chair of Surface Science and Corrosion at the University of

Erlangen-Nuremberg in Germany. His principal research experience includes materials science, micro-nanostructures, surfaces/interfaces, thin film characterization, electrochemistry, photochemistry, corrosion, and semiconductor chemistry. He has also been the organizer of numerous scientific symposia, published more than 150 journal articles, given approximately 50 keynote lectures, and holds two patents.

He received his B.Sc. in physical chemistry from Winterthur Polytechnic, Winterthur, Switzerland; an M.Sc. in physical chemistry from the University of Basel, Switzerland; and a Ph.D. in materials science from the Swiss Federal Institute in Zurich, Switzerland. ■



## Joachim Walter Schultze 1937-2005

JOACHIM WALTER SCHULTZE was born in 1937 and grew up in Jena, Germany. He started his studies in chemistry at the University of Jena; he continued those studies in 1956 at the Freie Universität Berlin. He did his Diploma work in 1962 at the Fritz-Haber-Institut in Berlin and joined the group of K. J. Vetter at the Freie Universität-Berlin. There he earned his PhD in 1966, with a study of the electrochemical kinetics of the formation of oxide layers on platinum.

Walter Schultze stayed on with Vetter after receiving his PhD, continuing his studies on classical electrode kinetics. At this time he published his important and basic research on electrosorption, the formation of anodic oxide layers and the kinetics of charge transfer processes. He introduced the separation of a geometric factor and a charge transfer part of the electrosorption valency and investigated the underpotential deposition of metals on gold single crystal electrodes, a topic which has had a renaissance during the last 15 years with the availability of synchrotron methods and scanning tunnelling microscopy as structure sensitive methods. His collaboration with groups in the field of the theory of the double layer led to a deeper understanding of electrosorption and electrode kinetics as well as the tunnel processes at oxide-covered electrodes. With this work, he received his habilitation in physical chemistry in 1972. He became a professor of physical chemistry at the Freie-Universität Berlin and was a director of the Institut fuer Physikalische Chemie from 1976 to 1978. In 1979 he took over the chair of physical chemistry and electrochemistry at the Heinrich-Heine-Universität Duesseldorf.

At Duesseldorf, Schultze added spectroscopic methods, like XPS and Auger-spectroscopy, to the investigation of electrode surfaces. His work included the modification of surfaces and surface layers by ion implantation and laser treatment. Photoelectrochemistry and classical methods like capacity measurements were used to learn details about electronic properties of anodic layers on electrodes. The basis of his work was, however, electrode kinetics. In this field he applied fast transient measurements to the formation of anodic films ranging from microseconds to hours. In his last years, he was active in the field of microelectrochemistry and organized several related meetings. The strength of his scientific work was dominated by general outlines in the various fields and the convincing simplicity of his straightforward models he used to explain his results and the effects he studied. Many people will remember his talks on the passive film on Ti and its variation with the orientation of crystallites, during which he would inevitably use his laser pointer to scan the image of oxide grains switching from the power point presentation to the image specially printed on his tie.

In addition to his basic electrochemical investigations, Walter Schultze always had a strong interest in applied research such as corrosion and passivity of metals, electrodeposition of metals, electrocatalysis, the Purex process for the recycling of nuclear fuel and nuclear waste, hard coating materials like nitrides, and polymer layers on metals. This work led to intense collaboration with industry and provided excellent opportunities for his numerous coworkers to develop their future professional careers. His scientific work is documented in more than 300 scientific papers.

Walter Schultze was an outstanding organizer of science and scientific programs. He was very active in various scientific societies like the Gesellschaft Deutscher Chemiker, the Fachgruppe Angewandte Elektrochemie, the Deutsche Bunsen Gesellschaft für Physikalische Chemie, the Deutsche Gesellschaft für Oberflächen und Galvanotechnik, and several commissions of the DECHEMA. In the year 1995/96 he served as a president of the ISE. He was the main founder of the Arbeitsgemeinschaft Elektrochemischer Forschungsinstitutionen (AGEF), which has almost 100 members now and which is promoting the collabora-

tion of various groups in industry and at universities nationwide.

His activities were honored with several awards like the Fellowship of the Japan Society for Promotion of Science in 1989, the Heyrovsky Medal in 1990, and Fellow of The Electrochemical Society in 1997.

Walter Schultze was also an outstanding leader of his research group. He had more than 80 PhD students who are following successfully their careers in research institutes and many different branches of industry. He was always thought-provoking and a guide for many young students. In this sense he influenced the scientific career of many young colleagues and developed their interest in electrochemistry. He had a strong personal character and he liked clear decisions. When he made a decision one could rely on him even in almost hopeless situations. He was deeply convinced of competition in the various fields of research. Strong arguments were required to change his mind. However, he was always fair and was driven by a strong interest in research and successful work.

Walter Schultze also was always very active in sports; he liked running, cycling, swimming, and tennis. He was also very competitive in sports; he could not resist turning a leisurely swim or a friendly stroll up a mountain with friends into a heated competition. He had an accomplished family life with his wife Elke, his three grown children, and several grandchildren, whom he adored. We will never forget his humorous sketches and songs, nor at moments in critical situations of boring sessions when his sudden presentations could shift all problems to a less important level where they belonged.

We all will miss Walter Schultze's activity, fruitful scientific discussions, his drive and talent in organizing scientific activities, and his remarkable humour. ■

*This notice was contributed by Hans Henning Strehblow.*



**Walter J. Hamer**  
1907-2004

WALTER J. HAMER, ECS past president, and an expert on the fundamental science of batteries that power flashlights, hearing aids, and pacemakers, died June 29, 2004 at his home in Gaithersburg, Maryland. He wrote or co-wrote more than 100 scientific papers, the last published in 1995.

Walter J. Hamer was born in Altoona, Pennsylvania on November 5, 1907. After receiving his undergraduate training at Juniata College in Huntingdon, PA, he attended Yale University graduate school and obtained his Ph.D. degree in physical chemistry in 1932. In 1966, he was awarded an honorary D.S. from Juniata College at the dedication of

its new Science Center. He returned to Yale for two years as a U.S. Navy post doctorate research fellow. In July 1934, he accepted a position as research associate in physical chemistry at MIT, which he held until November 1935 when he joined the staff of the National Bureau of Standards (NBS), now known as National Institute of Science and Technology (NIST).

Dr. Hamer conducted research on electrolytes, fused salts, primary and secondary batteries, and on standard cells. He published many papers on his research, including a series on lead-acid storage batteries, one on dry cells, and another on pH standards. One of his major responsibilities at the National Bureau of Standards was the maintenance of the nation's primary standard of electromotive force.

During World War II, Dr. Hamer worked as an electrochemist, first for the Office of Scientific Research and Development and then the Manhattan Project. He served as a battery consultant to the Defense Department from 1952 to 1954 and was a member and officer of subcommittees on batteries of the Society of Automotive Engineers, the American Institute of Electrical Engineers, and the American Standards Association. He was chair of an American Standards Association committee when it adopted the "AAA" designation for that now-ubiquitous battery. He served on many other important

national and international committees.

He was a member of many technical societies having to do with electrochemistry and physical chemistry. He received the U.S. Commerce Department's Gold Medal for distinguished government service in 1965. He was a member of Sigma Xi and a fellow of the Institute of Electrical and Electronic Engineers, the American Institute of Chemists, and the American Association for the Advancement of Science.

In 1948, as an expert witness for the Federal Trade Commission, Dr. Hamer testified against exaggerated advertising claims for AD-X2, an additive sold to extend the life of automobile batteries. U.S. senators were lobbied by the product's developer to pressure the Bureau to change its negative assessment. In 1953, the U.S. Secretary of Commerce dismissed the director of the Bureau over the affair; but was forced to reinstate him after an outcry that the firing would undermine the bureau's independence. In 1970, Dr. Hamer published a report of a test that proved the additive was ineffective. That work won a commendation from the Undersecretary of Commerce and he received an award from the American Institute of Electrical Engineers.

Dr. Hamer joined The Electrochemical Society in 1937. He was chair of the Theoretical (now Physical Electrochemistry) Division

## Anatomy of a Valued Friendship

by Roger G. Bates

It was early 1939; but my enjoyment of the spring in New Haven was tempered by the realization that I was in my second (and final) year as a research postdoc at Yale, with no firm prospects for a job in the fall. Employment opportunities were scarce.

When Professor Herbert Harned entered my lab that morning, I was prepared for his usual discourse on professional baseball (in which I had no interest). Instead, he had come to say that his former student, Walter Hamer, had written that his emf studies of electrolytes at the National Bureau of Standards in Washington were going well—so well, in fact, that there was a feeling on the part of his superiors that this area of the work should be strengthened. As usual, however, the availability of funds was in question. I had not met Walter; but let no time go by before informing him by letter that I was in a strengthening mood and would like to be considered a viable candidate. He replied with the information that the first step would be to acquire a competitive Civil Service rating for candidates. With the

support of Professor Harned, I embarked on this process, which proved to be more time-consuming than one might expect.

I learned that Walter and I could meet in Boston at the fall meeting of the ACS; but I found a frustrating summer ahead of me. The replies I received from my inquiries to the NBS were neutral, or at best mildly hopeful; but they did not offer the encouragement I had sought. Walter's replies quickly revealed that he had already acquired a distrust of bureaucracy, which, I believe, remained with him throughout his life. His communications invariably ended with the admonition, "anything can happen."

Nevertheless, when we met in Boston, Walter was convinced that my appointment was imminent, and he suggested that I join him in his car for the trip to Washington. I was happy to accept his invitation. It was my first visit to our nation's capital, and on arrival I learned by telegram that the time-consuming difficulties of funding as well as the selection of my name from the Civil Service register had finally been surmounted. An appointment could now be made to the position which I so desired and was to occupy for 30 years.

It was a memorable trip. I found Walter to be justly proud of his association with two of the giants of electrochemistry, namely Herbert Harned of Yale, his mentor for the Ph.D. degree, and George Scatchard of MIT, with whom he worked as a postdoc. Before our destination had been reached, our friendship had acquired a firm basis.

Walter Hamer's contributions to the electrochemistry of ionic solutions and the thermodynamics of ionic processes are uniformly admired, while his role in the unfortunate ADX2 incident may be regarded as exemplary. His early careful emf measurements of phthalate buffer solutions have withstood the test of time; and his data for potassium acid phthalate remain a crucial source of one of the cornerstones of the standard scale of pH widely used in the world today.

We have lost an electrochemist of note, and as such he will be greatly missed. For me, his passing likewise marks the end of a valued friendship.

*Roger Bates is a professor of chemistry emeritus, University of Florida.*



from 1951 to 1953 and served on many of its committees. He was a member of the Battery Division executive committee from 1954 to 1956. In 1951, he organized and contributed to the bicentennial issue of the *Journal of The Electrochemical Society*, devoted to the Theoretical Division; and he conducted a number of Society symposia. He was editor of the Society monograph on *The Structure of Electrolytic Solutions*, published in 1959. He served on many Society standing committees. He was elected and served as Society Vice-President from 1960 to 1963 and as President from 1963 to 1964. In 1980, Dr. Hamer was elected an Honorary Member of the Society, and in 1991, he received the Robert T. Foley Award of the ECS National Capital Section.

Dr. Hamer retired from the Bureau in 1972, but continued his work as a consultant for the U.S. government and private industry. In his spare time, he raised camellias at his home in the Chevy Chase section of Washington. Alma Hamer, his wife of 61 years, died in 2002. Survivors include a daughter, Margaret J. Hamer of Bethesda, and a grandson.

*Note: Thanks to Jim Rowley, Walter Hamer's son-in-law, for contributing to this notice.*

## A Personal Reflection on Walter Hamer

by Arthur Maryott

Walter liked challenges whether in his professional work (e.g., the AD-X2 battery additive case) or in his hobbies. He started growing camellias as a hobby in the mid-fifties, in part, because they were generally not considered cold-hardy in the Washington area. He joined our newly organized Camellia Society and subsequently became the show chair, a job that he performed with much energy and optimism. He encouraged participation by noting that one only had to enter a single bloom to win "Best Bloom in Show." He later

proved his point by doing just that. The uniquely severe winter of 1977-78 did much damage to camellia plants and discouraged growers. With virtually no blossoms available, the Annual Spring Show was to be cancelled. Walter persevered, however, and devised a very successful show with historical and educational exhibits that promoted optimism for the future. This optimism has been borne out through the years by noting that many nurseries in the area now sell camellias.

*Note: Arthur Maryott was a colleague of Walter Hamer's at the National Bureau of Standards.*

## In Memoriam

by Y. C. Wu

Walter Hamer's early work concentrated on the thermodynamics of electrolytic solutions. His pioneer work on pH set the foundation for the current pH standards. During World War II, he was assigned to work on the Manhattan Project. After the war, he returned to his work on the structure of electrolytic solutions. Some years later, he was assigned to maintain the International Volt Standard until his retirement in 1970. He organized several symposia at NBS in the 1950s, and authored several books and published many scientific papers.

Dr. Hamer was known to be a very careful worker. He documented every detail in his experimental work, as witnessed by his early publications. His measurements on the EMF of sulfuric acid are considered a classical work.

In the late 1980s, he came back to NIST (formerly NBS) as a consultant to work on conductivity standards. Dr. Hamer then jointly published several more papers, showing a sharpness of mind, even late in life. Surely we all miss him.

*Note: Y. C. Wu was a colleague of Walter Hamer's at the Bureau.*

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