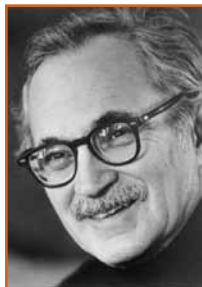


Bard and Goodenough Awarded National Medal of Science



ALLEN J. BARD

ALLEN J. BARD and JOHN B. GOODENOUGH, pre-eminent scientists in their fields and longtime ECS members, were each awarded the National Medal of Science, one of the highest honors bestowed by the U.S. government upon scientists, engineers, and inventors.

Allen J. Bard, of The University of Texas at Austin, received his Medal for “contributions in electrochemistry, including electro-luminescence, semiconductor photoelectro-chemistry, electroanalytical chemistry, and the invention of the scanning electrochemical microscope.” Professor Bard has spent his entire career at the University of Texas at Austin. He joined the faculty in 1958 and has served as the Hackerman-Welch Regents Chair in Chemistry since 1985. His publications include three books, more than 800 peer-reviewed research papers, and 75 book chapters. He has received more than 23 patents and has served as editor-in-chief of the *Journal of the American Chemical Society* for nearly two decades.



JOHN B. GOODENOUGH

John B. Goodenough, of The University of Texas at Austin, received his Medal for “groundbreaking cathode research that led to the first commercial lithium ion battery, which has since revolutionized consumer electronics with technical applications for portable and stationary power.” Professor Goodenough is a professor of mechanical engineering and materials science at UT Austin. He is known for developing the Li-ion rechargeable battery, as well as for developing the Goodenough-Kanamori rules for determining the sign of the magnetic super-exchange in materials. Although Sony Corporation is responsible for the commercialization of technology for lightweight rechargeable batteries now ubiquitous in today’s portable electronic devices, Goodenough is widely credited for its original identification and development.

Bard and Goodenough are part of a distinguished group of twelve National Medal of Science Laureates who received the award on February 1. “I am proud to honor these inspiring American innovators,” President Obama stated. “They represent the ingenuity and imagination that has long made this nation great—and they remind us of the enormous impact a few good ideas can have when these creative qualities are unleashed in an entrepreneurial environment.” The recipients received their awards at a White House ceremony. This marks the 50th anniversary of the presentation of the first National Medals of Science in 1963 by President John F. Kennedy.

“On behalf of ECS, we congratulate Drs. Bard and Goodenough on this celebrated achievement,” commented ECS President Fernando Garzon. “They are two of the most significant electrochemists of their generation, and have served as mentors to many ECS members, and others in their fields. Deservedly, each of them are also prior recipients of the Olin Palladium Award, the most significant acknowledgement of scientific achievement in electrochemistry presented by ECS. We honor their commitment to our science and embrace their inspiration.”

Administered for the White House by the National Science Foundation, the National Medal of Science was established by the 86th Congress in 1959 as a presidential award to be given to individuals “deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical, or engineering sciences.” In 1980 Congress expanded this recognition to include the social and behavioral sciences. ■

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Winners of National Medals

The National Medal of Science™ and the National Medal of Technology and Innovation™ are prestigious honors because they consider the societal impact of a candidate’s work. ECS members who have won these awards are part of an informal “ECS Hall of Fame.” The awards are not only prestigious, they are important in a broad way: the work must have saved lives, asked and answered important questions, and helped shape the course of the U.S. and the planet. The following is a list of ECS members who have received one of the U.S. National Medals. See the spring 2009 issue of *Interface* (p. 37) for a full story about the ECS “Hall of Fame.”

National Medal of Science

Established 1959

Allen Bard (2012)
John Goodenough (2012)
Alfred Cho (1993)
Norman Hackerman (1993)
Nick Holonyak (1990)
Rudolph Marcus (1989)
Fred Seitz (1973)
Peter Debye (1965)

National Medal of Technology and Innovation

Established 1980

Esther Takeuchi (2008)
Adam Heller (2007)
C. Grant Willson (2007)
Alfred Cho (2005)
Nick Holonyak (2002)
Jerry Woodall (2001)
Wilson Greatbatch (1990)
Gordon Moore (1990)

Romankiw Celebrates 50 Years with IBM

LUBOMYR T. ROMANKIW was recently honored for 50 years of electrochemistry at the IBM Thomas J. Watson Research Center in Yorktown Heights, New York. He is recognized internationally for his work on magnetic recording and the development of a new fabrication paradigm for the thin film inductive heads. Dr. Romankiw is one of the most active and highly-decorated members in The Electrochemical Society's 110 year history, and attending the anniversary ceremony to honor Romankiw were several ECS dignitaries including: Richard Alkire (Past President 1985-86), Hariklia Deligianni (Secretary), and Roque Calvo (Executive Director).

Dr. Romankiw will also be celebrating his 50th anniversary as an ECS member next year, and during his years of service he has held many positions and been recognized with numerous honors and awards. He served the Society in leadership positions as an officer of the Electrodeposition Division (1977-83) and on the Board of Directors (1981-83). He was also the lead organizer of a number of important symposia on Magnetic Materials, Processes, and Devices.

Dr. Romankiw is an ECS Fellow and received the Electrodeposition Division Award in 1984, and the Vittorio de Nora Award in 1994, which is the Society's highest recognition for contributions to electrochemical engineering and technology. In 2003, he was distinguished with Honorary Membership in the Society, which recognizes only the highest level of contributions to electrochemical and solid state science and technology. During the Society's 110 year history, only 75 members have been bestowed with Honorary Membership and the list includes luminaries like Edward Weston, Thomas Edison, Leo Baekeland, Charles Tobias, Gordon Moore, and IBM Fellow Jerry Woodall.

During his 50 year career at IBM, Romankiw has received many other awards for his work involving magnetic materials and devices, C4 on-chip solder technology, and copper electrodeposition. In addition to being an IBM Fellow, he is a member of the IBM Academy of Technology, and an IEEE Fellow. He received the 1993 Society of Chemical Industry Perkin Medal, the 1994 IEEE Morris N. Liebmann Technical Field Award, and the Inventor of the Year Award from the Eastern New York Intellectual Property Law Association (2000 and 2001). In March 2012, he was inducted into the National Inventor's Hall of Fame, and was one of ten great inventors so honored, including Apple co-founder Steve Jobs.

Dr. Romankiw has made special contributions to ECS, IBM, and to the science of electrochemistry. His inventions have significantly contributed to technological advances that have benefited all of humankind with the invention of the magnetic recording technology. At the IBM anniversary ceremony, Dr. Deligianni had these words to say about Romankiw, "Since 1988, when Luby hired me in IBM Research, he has been an inspiring collaborator, leading one innovation after the other. At that time, Luby had surrounded himself by a world class team of electrochemists and electrochemical engineers who were aspiring to change the world. Romankiw and team played a key role in changing the perception in the microelectronics and semiconductor industries that electrochemistry is a predictable science."



LUBOMYR ROMANKIW reflecting on his work at IBM during his 50th anniversary celebration. On the table next to him is the world's first CD-ROM.

Dr. Romankiw's contribution to the field of electrochemical technology is unparalleled. He has pioneered the electrodeposition through-mask technology, the paddle cell, and permalloy electrodeposition for thin film heads, which permitted a phenomenal > 40 million times increase in hard disk drive areal density since its introduction. His contributions laid the foundations for further developments in data storage in the microelectronics industries and provided the industry with invention of a controllable permalloy electroplating solution, an understanding of the mechanism of co-deposition of Fe with Ni, a unique "frame" plating technology, understanding mathematical modeling of current distribution for through mask electroplating (composition and thickness control) and defined the relation between electroplating parameters, film nucleation and growth, structure of deposit, magnetic properties of films, and performance of thin film heads. Because of his pioneering work and persistence, electrochemical technology propagated in thin film packaging, copper chip interconnects, chip-package interconnects, micro electro-mechanical systems (MEMS), and more recently into the fabrication of thin film solar cells.

A symposium was held at IBM's Thomas J. Watson Research Center on December 7, as part of the anniversary celebration. The overviews in the symposium gave tribute to the work of Romankiw and his many inventions that were integrated into the thin film head that not only enabled a quantum jump in magnetic recording, but also had an immense impact on the science of electrochemistry and on its use in electronic fabrication. ■

In Memoriam

SAM H. DREISBACH (b. 1924), member since 1949, Electrodeposition Division.

HERMAN N. HAMMER (d. 2012), member since 1957, Electrodeposition Division,
former Chair of the Metropolitan New York Section.

RALPH JACCODINE (b. 1926), member since 1970, Electronics and Photonics Division.

PER JOHANDER (1953-2012), member since 1992, Corrosion Division.

ROBERT W. POWERS (b. 1922), member since 1959, Physical and Analytical Electrochemistry Division

YOHTARO YAMAZAKI (b. 1945), member since 1984, Battery Division