Allen J. Bard and John B. Goodenough Receive ECS Honorary Membership

Honorary ECS Memberships, recognized as one of the highest Society honors, were awarded to Allen J. Bard and John B. Goodenough on November 23, 2013 at a celebratory luncheon at The University of Texas Etter-Harbin Alumni Center. More than 80 colleagues, many who have studied with and been mentored by them, attended this extraordinary event, along with several ECS Past Presidents.

ECS President Tetsuya Osaka, who was unable attend, recognized their achievements with the following note:

> "*On behalf of The Electrochemical Society, it is my pleasure to congratulate Professors Bard and Goodenough on being selected as the 76th and 77th Honorary Members in the 111 year history of the Society. This recognition puts you in a group amongst some of the greatest scientists in history. We thank you for your contributions to the advancement of our science which in many ways has influenced the progress and quality of life for all of mankind.*"

Arumugam Manthiram, Director, Texas Materials Institute, Director, UT Materials Science & Engineering Program and Joe C. Walter Chair in Engineering, welcomed the attendees and served as emcees for the event.

Roque Calvo, ECS Executive Director, recounted the history of Honorary Membership, noting the distinguished list of recipients. Roque also presented a 2013 ECS Student Chapter of Excellence Award to the University of Texas at Austin Student Chapter.

After introducing Allen Bard with a brief summary of his many accomplishments, Fernando Garzon, ECS Past President, presented an ECS Honorary Membership scroll.

Allen J. Bard is the Norman Hackerman-Welch Regents Chair in Chemistry in the Department of Chemistry at The University of Texas at Austin, and the Director of the Center for Electrochemistry. He is considered the "father of modern electrochemistry" for his innovative work developing the scanning electrochemical microscope. This is an analytical tool used globally to find new materials for use in technology, as well as to explore the interior of cells.

Dr. Bard has published over 800 peer-reviewed papers and other publications, and has more than 23 patents. He was editor-in-chief of the *Journal of the American Chemical Society* from 1982-2001. He has worked as a mentor and collaborator with more than 75 PhD students, 17 M.S. students, and 150 postdoctoral associates.

Among Dr. Bard's many awards are The Electrochemical Society's Carl Wagner Memorial Award (1981), Henry B. Linford Award for Distinguished Teaching (1986) and Olin Palladium Medal (1987); Priestley Medal (2002), the Wolf Prize in Chemistry (2008). He was elected into the American Academy of Arts & Sciences in 1990. In 2013, Dr. Bard was awarded the National Medal of Science.

(continued on next page)

The newest honorary members with current and past members of the ECS Board of Directors. From left to right are **Roque Calvo**, *ECS Executive Director;* **Fernando Garzon**, *Past President;* **Johna Leddy**, *Former Secretary;* **Allen Bard**; **John Goodenough**; **Larry Faulkner**, *Past President and Honorary Member;* **Fred Strieter**, *Past President and Honorary Member;* **Krishnan Rajeshwar**, *3rd Vice President.*

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Dr. Bard gave an insightful award lecture, extolling the societal benefits of scientific research, but urging a continued commitment to curiosity based research. Dr. Bard highlighted the fundamental research on magnetic resonance imaging, noting that early applications for funding could not have foreseen later applications like medical brain scans and detection of viruses such as prostate cancer and HIV. Dr. Bard emphasized that, "our scientific community, and our government, shouldn't put too much constraint on scientific research, particularly if we want innovation." Dr. Bard concluded by noting the importance of scientific societies like ECS and noting his concern about the explosive growth in the number of scientific journals for the purpose of generating profits.

Krishnan Rajeshwar, ECS Vice President, presented an ECS Honorary Membership scroll after introducing John Goodenough, with a brief summary of his many accomplishments.

John B. Goodenough is the Virginia H. Cockrell Centennial Chair in Engineering, in the Departments of Mechanical and Electrical & Computer Engineering at The University of Texas at Austin. A prominent solid-state physicist, he is credited for the identification and development of the Li-ion rechargeable battery as well as for developing the Goodenough-Kanamori rules for determining the sign of the magnetic superexchange in materials.

Dr. Goodenough has authored more than 550 articles, 85 book chapters and reviews, and five books, including, *Magnetism and the Chemical Bond* (1963) and *Les oxydes des metaux de transition* (1973). He holds at least 16 U.S. patents.

Dr. Goodenough is a member of the National Academy of Engineering, the National Academy of Sciences, and others. He has received numerous awards including the Von Hippel Award of The Materials Research Society (1989), the ECS Olin Palladium Award (1999), and is a co-recipient of the 2009 Enrico Fermi Award, one of the oldest and most prestigious given by the U.S. government. In 2010, he was elected a Foreign Member of the Royal Society. In 2013, Dr. Goodenough was awarded the National Medal of Science.

During his award lecture, Dr. Goodenough shared his incredible life journey in science and concluded by emphasizing the need for alternative strategies for the development of sustainable energy. Dr. Goodenough noted the need for energy density increases and stated that, "new approaches like thin membrane block dendrites give us hope that we can make important steps toward sustainable energy supplies."

Dr. Bard and Dr. Goodenough were both recipients of the United States National Medal of Science in 2013. As ECS Past President Fernando Garzon stated at the time, *"We honor their commitment to our science and embrace their inspiration."*

Fernando Garzon, *ECS Past President, presenting* **Allen Bard** *with Honorary Membership.*

Krishnan Rajeshwar, *ECS 3rd Vice-President, presenting* **John Goodenough** *with Honorary Membership.*

Larry Faulkner, *ECS Past President, Honorary Member, and former President of the University of Texas at Austin speaks at the luncheon.*

Guests were invited to attend a reception and luncheon, which included remarks from Larry Faulkner, ECS Past President, Honorary Member, and former President of the University of Texas at Austin.

Dr. Faulkner noted that the body of knowledge of electrochemistry is impressive, particularly considering the inherent difficulty of the field. "There is an intrinsic elegance in what we already know," Dr. Faulkner said, while making a strong case for additional research and development. "Thanks to science, particularly chemistry, life is incredibly better than just a few years ago." Yet, he concluded by speaking to the urgency of our resource challenges, encouraging all present to help answer the question, "How can we wisely make use of Earth's resources, fulfilling people's wishes now and indefinitely into the future?"

Ed. Note: *Read the full text of Larry Faulkner's talk in this issue's "Currents" column on page 37. Read about this event from the students' perspective in this issue's "Student News" on page 84.*

ECS Names Digital Library Leadership Collections

At the 223rd ECS Meeting in Toronto, the Board of Directors approved the renaming of the ECS Digital Library President's Collection to the Leadership Collection, to better represent the donors that have already supported the Digital Library and encourage other former officers to sponsor additional collections. At the time, seven collections were named: The Charles W. Tobias Collection of 1971; The Ralph Brodd Collection of 1982; The Larry Faulkner Collection of 1992; The Wayne Worrell Collection of 1993; The Robert Frankenthal Collection of 1994; The James Amick Collection of 1995; The Battery Division Collection of 1999. Each of these leaders has supported ECS with a major gift to our publications endowment, and helped us digitize our scientific archives.

The Frederick Strieter Collection of 1983 was recently added as our eighth addition to the Leadership Collection, thanks to a generous gift from Past President, Honorary Member, and ECS Fellow Frederick Strieter.

With more than 100 years of scientific research published, there is still ample opportunity for naming collections within the ECS Digital Library! An annual collection may be renamed after a current or former ECS leader for $15,000. If you are interested in naming a collection in the ECS Digital Library after yourself or someone else, please contact Dan Fatton, Director of Development at 609.737.1902.

ECS Urges Constituents to Join ORCID

ECS is pleased to announce that it recently became a member of the Open Researcher and Contributor ID (ORCID) registry. ORCID is an open, non-profit, community-based effort founded by academic institutions, professional bodies, funding agencies, and publishers to create and maintain a registry of unique researcher identifiers intended to remedy the systemic name ambiguity problem seen in scholarly research. ORCID resolves the confusion brought about by name changes, the cultural differences in name order presentation, and the inconsistent use of first-name and middle-name abbreviations on published research papers.

The ORCID ID is a persistent digital identifier that distinguishes an author from every other researcher, and it follows an individual throughout his or her career. Similar to the Digital Object Identifiers (DOIs) used in the ECS journals to identify individual published papers, the ORCID ID is a 16-digit number which identifies the author and which can be published in electronic editions in the form of a Web address that leads to the researcher's individual author profile. The ORCID record is controlled by the researcher, not by the organization, and individuals can manage their record of activities and search for others in the ORCID Registry at their convenience.

ORCID IDs are free to obtain and use, and the one-time registration process has been integrated into the ECS journals submission site, ECSxPress (ExP) for convenience. Submitting authors can input their existing ORCID ID or register and secure an ID during the submission process via a built-in link to the ORCID site. Authors can also go directly to the ORCID website to obtain an ID and add it to their ExP profiles at their convenience. Once this process has been completed, the ExP system will recognize the ORCID ID and include it in all future submissions. When accepted papers are published, ECS will display the ORCID IDs of all registered authors on the article's abstract and full-text views within the ECS Digital Library. Moving forward we will will be looking for ways to integrate ORCID IDs into our other systems and databases, such as those for the Meeting Abstracts and *ECS Transactions*.

For more information about the ORCID ID registry, please visit the ORCID website at http://orcid.org, or contact ECS at publications@electrochem.org.

Annual Business Meeting and Luncheon

The Annual Society Business Meeting and Luncheon will take place on **Tuesday, May 13**, starting at 1215h. The President, Secretary, and the Treasurer will give brief reports on the current state of the Society.

All members and meeting attendees are encouraged to participate in this event. Tickets are $27.00 by Early-Bird deadline, and $32.00 onsite. See page 23 for more information about the Orlando meeting, including how to register.

Division News

12th IE&EE Division Outreach Program

The Industrial Electrochemistry and Electrochemical Engineering (IE&EE) Division of the Electrochemical Society (ECS) completed its twelfth Outreach Program at the 224th ECS Meeting in San Francisco, California. The outreach program is designed to bring awareness of electrochemical energy conversion devices to the future generations. The program aims to foster the younger generation's interests in the fields of electrochemistry and electrochemical engineering. The outreach program has become a tradition in the IE&EE Division since its start at the 210th ECS Meeting (Cancun, Mexico, Fall 2006). Typically, the outreach programs have taken place at local schools. But, at the 224th meeting of the ECS, for the first time, the outreach program took place at the ECS site (the Hilton San Francisco Hotel), therefore, the participants of the program had ample opportunities to be exposed to electrochemistry and electrochemical engineering research. In addition to the outreach program, the participants attended the Energy Research Group Showcase & Poster Session of the Electrochemical Energy Summit that took place on Sunday evening, and learned about the hydrogen fuel cars while touring the exhibit during the conference.

IE&EE members Gerardine Botte (Division Chair; Ohio University), John Staser (Ohio University), Elizabeth Biddinger (City College of New York), and E. Jennings Taylor (Division Secretary/Treasurer; Faraday Technology, Inc.), along with graduate students Mike Shen of Washington University in St. Louis, Venkateshkumar, Prabhakaran of Illinois Institute of Technology, Nazrul Mojumder of University of Nevada, Reno, and Ohio University's Luis A. Diaz, Ali Estejab, Fei Lu, Vedasri Vedharathinam, and Santosh Vijapur, conducted the outreach program.

Seventy-seven high school students from two schools, Lowell High School and Galileo Academy of Science and Technology, along with their teachers, Bryan Cooley and Serena Chan, participated in the outreach program. The students represented a wide range of ethnic and cultural backgrounds. The event started with a keynote lecture from Dr. Botte explaining fuel cell and water electrolysis technologies, followed by a briefing on the fuel cell car competition to the students. The students were divided into 10 teams to compete in the race. The ECS outreach facilitators helped the students assemble the cars and explained technical details of fuel cells to the teams during the competition. Teams calculated the amount of hydrogen, produced by water electrolysis, required to fuel their cars to travel a fixed distance. The teams then competed with each other to make their car travel as close as possible to the assigned distance. Certificates were presented to the winning team (the team that came closest to the assigned distance). Throughout the event, the student participants demonstrated great enthusiasm and curiosity about the model fuel cell car and each team strived to win. In accordance with custom, the model fuel cell cars were donated to the high schools to further carry out related education activities in the future.

ECS and the IE&EE Division congratulate the winning teams "Lightning McQueen" from Lowell High School (**Jianbert Calayag, Ahsan Sheikh, Justin Lee, and Ryan Chan**) and "Gal's Finest" from Galileo Academy of Science and Technology (**Joshua Zhu, Lisa Li, Timothy Chung, Ariunaa Bat-Ochir, Lisa Au, Cassandra Chow, and Terry Cho**), on their success, and offer a special thanks to all of the student participants and their teachers, Bryan Cooley and Serena Chan. We appreciate the time and effort spent by all the volunteers who helped with the organization and planning of the event: Shannon Bruce (Center for Electrochemical Engineering Research, Ohio University), Stacy Schlags (ECS meetings coordinator), Gerardine Botte (IE&EE Division Chair, Ohio University), Mary Yess (ECS Deputy Executive Director), and Ohio University's ECS Student Chapter. We offer special thanks to Vijay Ramani of the Illinois Institute of Technology for purchasing the fuel cell cars and for supporting other parts of the outreach financially through his National Science Foundation CAREER Award.

The outreach is an important part of the education component of The Electrochemical Society. It aims to inspire the future generation on the importance of electrochemical science, engineering, and technology on the solution of global problems related with the sustainability of energy and water. To date, members of the Industrial Electrochemistry and Electrochemical Engineering Division (IE&EE) of the Society have performed 12 outreach events (in the US as well as overseas). The program has been a success and has reached out to over 650 participants from middle and high schools. The participants learn by doing and having fun. It is exciting to see the students passionate about the program and eager to learn. The IE&EE Division looks forward to continued success in conducting this high impact educational outreach program at future meetings.

If you have an interest in getting more involved in the activities of the division, please contact Gerardine Botte at botte@ohio.edu.

Contributed by: Gerardine G. Botte, IE&EE Division Chair, and Ohio University ECS Student Chapter Faculty Advisor.

Division Officer Slates Announced

New officers for the 2014-2016 term have been nominated for the following Divisions. All election results will be reported in the summer 2014 issue of *Interface*.

Dielectric Science & Technology Division

Chair
Dolf Landheer, National Research Council – Canada

Vice-Chair
Yaw Obeng, NIST

Secretary
Vimal Desai Chaitanya, New Mexico State University

Treasurer
Purushothaman Srinivasan, Global Foundries

Awards Chair
Peter Mascher, McMaster University, Canada

Symposium Chair
Mahendra Sunkara, University of Louisville

Membership Chair
Uros Cvelbar, Jozef Stefan Institute, Slovenia (IJS)

Members-at-Large (up to 30 to be elected)
Sacharia Albin, Norfolk State University
Gautam Banerjee, Air Products and Chemicals, Inc.
William Brown, University of Arkansas
Zhi Chen, University of Electronic Science and Technology of China
Toyohiro Chikyow, National Institute for Materials Science
Stefan De Gendt, IMEC
John Flake, Louisiana State University
Reenu Garg, International Rectifier
Dennis Hess, Georgia Institute of Tecnology
Michel Houssa, University of Leuven
Rashmi Jha, University of Toledo
P.C. Joshi, Oak Ridge National Laboratory
Samares Kar, Indian Institute of Technology
Zia Karim, AIXTRON
Paul Kohl, Georgia Institute of Tecnology
Ana Londergan, Qualcomm Technologies
G. Swami Mathad, S/C Tech Consulting USA
Robert Mertens, University of Central Florida
Durgamadhab Misra, New Jersey Institute of Technology
Hazara S. Rathore
R. Ekwal Sah, Fraunhofer-Institut
Sudipta Seal, University of Central Florida
Krishna Shenai, Argonne National Laboratory
Kalpathy B. Sundaram, University of Central Florida
John Susko
Robin Susko
Ravi M. Todi, Qualcomm, Inc.

Nanocarbons Division

Chair
R. Bruce Weisman, Rice University

Vice-Chair
Slava V. Rotkin, Lehigh University

Secretary
Hiroshi Imahori, Kyoto University

Treasurer
Dirk Guldi, University of Erlangen-Nurnberg

Members-at-Large (at least two to be elected)
Jeff Blackburn, NREL
Olga Boltalina, Colorado State University
Francis D'Souza, University of North Texas
Tatiana DaRos, University of Trieste
Shunichi Fukuzumi, Osaka University
Karl M. Kadish, University of Houston
Prashant Kamat, University of Notre Dame
Richard Martel, University of Montreal
Nazario Martin, Universidad Complutense de Madrid
Roberto Paolesse, University of Rome Tor Vergata
Maurizio Prato, University of Trieste
Tomas Torres, Universidad Autonoma de madrid
Lon Wilson, Rice University
Ming Zheng, NIST

Industrial Electrochemistry & Electrochemical Engineering Division

Chair
Venkat Subramanian, Washington University in St. Louis

Vice-Chair
E. Jennings Taylor, Faraday Technologies, Inc.

Secretary/Treasurer (candidate not selected will become a member-at-large)
John Staser, Ohio University
Douglas P. Riemer, Hutchinson Technology

Members-at-Large (at least three to be elected)
James Fenton, University of Central Florida
Trung Van Nguyen, University of Kansas
Mark E. Orazem, University of Florida
Robert Savinell, Case Western Reserve University
John Weidner, University of South Carolina

websites of note

by Zoltan Nagy

Physical Properties of Ionic Liquids: Database and Evaluation
A comprehensive database on physical properties of ionic liquids, which was collected from 109 published sources spanning the period from 1984 through 2004. There are 1680 pieces of data on the physical properties for 588 available ionic liquids. From these the values for 276 kinds of cations and 55 kinds of anions were extracted. Contents: 1. The Classification of Ionic Liquids. Phase transition temperature: Melting point, Glass Transition Point, Decomposition Point, Freezing Point, and Clearing Point. 2. Density, Viscosity and Surface Tension. 3. Conductivity, Polarity, and Electrochemical Window. 43 pages.

- S. Zhang, et al., Chinese Academy of Sciences
- http://www.nist.gov/data/PDFfiles/jpcrd721.pdf

A Catalog of Commercially Available Ionic Liquids
Ionic liquids are ionic, salt-like materials that are liquid below 100 °C. Their use can be classified as process chemicals (*e.g.*, solvents, separation media) and performance chemicals (*e.g.*, electrolytes, lubricants). Ionic liquids tend to have appealing solvent properties and are miscible with water or organic solvents. Sigma-Aldrich offers a market-leading range of ammonium, imidazolium-, phosphonium-, pyridinium-, pyrrolidinium-, sulfonium, *etc*.-based ionic liquids.

- Sigma-Aldrich
- http://www.sigmaaldrich.com/chemistry/chemistry-products.html?TablePage=16255866

A Listing of Recent Publications on Ionic Liquids
The peer-reviewed articles on this *ChemComm* web themed issue highlight recent cutting edge achievements from prominent scientists working on all aspects of ionic liquid chemistry. Contributions range from new fundamental knowledge to novel applications of ionic liquids that take advantage of their unique attributes. The guest editors for this issue are Robin D. Rogers (University of Alabama), Douglas MacFarlane (Monash University) and Suojiang Zhang (Institute of Process Engineering).

- Royal Society of Chemistry
- http://pubs.rsc.org/en/journals/articlecollectionlanding?sercode=cc&themeid=d3759160-edca-4baf-871d-b8873930c974

About the Author

Zoltan Nagy is a semi-retired electrochemist. After 15 years in a variety of electrochemical industrial research, he spent 30 years at Argonne National Laboratory carrying out research on electrode kinetics and surface electrochemistry. Presently he is at the Chemistry Department of the University of North Carolina at Chapel. He welcomes suggestions for entries; send them to nagyz@email.unc.edu.

ECS Sponsored Meetings for 2014

In addition to the regular ECS biannual meetings and ECS Satellite Conferences, ECS, its Divisions, and Sections sponsor meetings and symposia of interest to the technical audience ECS serves. The following is a list of the sponsored meetings for 2014. Please visit the ECS website for a list of all sponsored meetings.

- **10th International Symposium on Electrochemical Micro & Nanosystem Technologies**, November 5-8, 2014 – Okinawa, Japan
- **Fifth International Conference on Electrophoretic Deposition: Fundamentals and Applications (EPD-2014)**, October 5-10, 2014 — Hernstein, Austria
- **65th Annual Meeting of the International Society of Electrochemistry**, August 31-September 5, 2014 — Lausanne, Switzerland
- **ACS Symposium on Fuel Cell Chemistry and Operation**, August 10-14, 2014 – San Francisco, CA
- **Shechtman International Symposium on Sustainable Mining, Minerals, Metal and Materials Processing**, June 28-July 4, 2014 — Cancun, Mexico
- **15th Topical Meeting of the International Society of Electrochemistry**, April 27-30, 2014 — Niagara Falls, Canada
- **14th Topical Meeting of the International Society of Electrochemistry**, March 29-April 1, 2014 — Nanjing, China
- **China Semiconductor Technology International Conference 2014 (CSTIC 2014)**,March 16-17, 2014 — Shanghai, China

To learn more about what an ECS sponsorship could do for your meeting, including information on publishing proceeding volumes for sponsored meetings, or to request an ECS sponsorship of your technical event, please contact ecs@electrochem.org.

In the NEXT *issue of*

INTERFACE

- **Scanning Probe Microsopy** will be featured in the summer 2014 issue. Guest edited by **David Cliffel** and **Rob Calhoun**, the featured articles include (tentative list): "Electrochemical Studies Using High Resolution AFM," by **Sergie Kalinin**; "Advances in Biological Scanning Electrochemical Microsopy" by **Shigueru Amemiya**; "Electrode Tips for Nanoscale Scanning Electrochemical Microscopy," by **Michael Mirkin**; and "Scanning Ion Conductance Microscopy," by **Lane Baker**.
- **Highlights from the ECS Meeting in Orlando...** Don't miss all the photos and news from the ECS spring 2014 meeting in Orlando.
- **Tech Highlights** continues to provide readers with free access to some of the most interesting papers published in the ECS journals, including articles from the Society's newest journals: *ECS Journal of Solid State Science and Technology*, *ECS Electrochemistry Letters*, and *ECS Solid State Letters*.
- Don't miss the next edition of **Websites of Note** which gives readers a look at some little-known, but very useful sites.