

2010 Oronzio de Nora Industrial Electrochemistry Fellowship Recipient



WENJING ZHANG is the 2010 recipient of the Oronzio de Nora Industrial Electrochemistry Fellowship of ECS. Dr. Zhang's report will be published in an upcoming issue.

Dr. Zhang is currently working as a post-doctoral research associate in the Department of Chemical and Biomolecular Engineering at Vanderbilt University in Nashville, Tennessee. Her research is focused on the design, preparation, and evaluation of new proton-exchange membranes and membrane-electrode-assemblies for hydrogen/air and direct methanol fuel cells. Under the supervision of Peter Pintauro, she is currently working on three projects: stretched low equivalent weight PFSA membranes for improved fuel cell performance, nanofiber composite proton-exchange membranes from acid-base polymer pairs, and the use of nanofiber electrospinning techniques to construct high-performance fuel cell electrodes.

Dr. Zhang received a bachelor's degree in polymer science and engineering from South China University of Technology under the direction of Zhen Tong. She stood out from the over 1,000 mainland Chinese applicants to successfully obtain the Jebsen Scholarship to attend graduate school at the Hong Kong University of Science and Technology (HKUST). At HKUST, she received a master's degree in the Department of Mechanical Engineering in 2005 (under the direction of Jingshen Wu) and a PhD in the Department of Chemical and Biomolecular Engineering in 2009. Dr. Zhang did her doctoral research under the supervision of Ping Gao.

The aim of Dr. Zhang's research was to propose, fabricate, and model new composite membranes for fuel cell applications. She successfully developed a hybrid nanocomposite Nafion membrane containing an exfoliated Pt-clay nanocomposite catalyst, which produces water *in situ* by capturing the permeated fuel gases during hydrogen/air fuel cell operation. Following this work, she was able to design an additional molecular lubricant to further enhance the crystalline ordering of Nafion membranes. She carried out molecular dynamics simulations on the effect of molecular lubricants and also performed systematic experiments to verify her hypothesis. The result is a new membrane with improved mechanical properties and a higher cell power density compared with pure Nafion membranes. She has also combined the use of a molecular lubricant with the exfoliated Pt-clay catalysts such that her newly developed membrane exhibited the synergy effects shown by the individual effort.

Dr. Zhang has co-authored four refereed journal articles and has given five research presentations at professional scientific/engineering conferences. She has received twelve academic scholarships and research awards and is a member of ECS and the North American Membrane Society. She is an active participant in the Teaching Certification Program at Vanderbilt University, in preparation for her future career as a faculty member at a major research university. Dr. Zhang is very pleased and grateful to be this year's recipient of the ECS Oronzio de Nora Industrial Electrochemistry Fellowship Award. She will use the award to develop a new fuel cell electrode structure for fuel cells to minimize the use of noble metals and thus reduce cost, thereby bringing the fuel cell one step closer to widespread commercial adaptation.

The Oronzio de Nora Industrial Electrochemistry Fellowship was established in 2003 to assist a postdoctoral scientist or engineer in research in the field of industrial electrochemistry.

The award, funded by the Oronzio de Nora Foundation, is in the amount of \$30,000 for one year, twice renewable based on successful research progress as judged by the award's committee.

The selection committee for the 2010 award was chaired by Albert S. Barnes, and included Peter S. Fedkiw, Peter C. Foller, Kenneth L. Hardee, Geoffrey Kelsall, Barry MacDougall, and John Wagenknecht.

2009 Young Author Award Winners

The Society is pleased to announce the recipients of the 2009 Norman Hackerman Young Author Awards. The awards are given annually for the two best papers published in the *Journal of The Electrochemical Society* (JES) by authors under 31 years of age. The awards were established in 1928 and renamed for Dr. Norman Hackerman, former Editor of JES. (Ed. Note: See the ECS Classics piece on Dr. Hackerman in the summer 2008 issue of *Interface*, p. 23.) The selection subcommittees were chaired by Christopher Apblett, Sandia National Laboratories, for the Electrochemical Science and Technology Subcommittee; and by Mike Kelly, Sandia National Laboratory, for the Solid-State Science and Technology Subcommittee.



PAUL ALBERTUS received the Young Author Award in the category of Electrochemical Science & Technology, for his paper, "Experiments on and Modeling of Positive Electrodes with Multiple Active Materials for Lithium-Ion Batteries" (JES, Vol. 156, No. 7, p. A606).

Dr. Albertus graduated from the Department of Chemical Engineering at the University of Michigan in 2003 with a BSE. After a year studying poetry and philosophy at the University of York in the United Kingdom, he began studies in the Department of Chemical Engineering at the University of California, Berkeley, in the research group of John Newman. There, he pursued a number of research projects. One involved mathematical modeling of side reactions and nonisothermal effects in the nickel metal-hydride battery, with model validation using a module from the Toyota Prius. Another project focused on battery size and capacity use in hybrid and plug-in hybrid electric vehicles, clarifying the importance of the shape of the pulse-power capability and the cell equilibrium potential.

Other projects included mathematical modeling of the galvanostatic and impedance response of electrodes with multiple active materials and/or a distribution of particle-conductive matrix contact resistances, aging in lithium-ion batteries, and a systematic analysis of the availability of the elements for scaling up batteries for grid and electric vehicle energy storage.

Dr. Albertus co-founded and co-taught a new UC Berkeley graduate-level course on battery technologies and markets in 2007. After receiving a PhD in 2009, he joined the Robert Bosch Research and Technology Center in Palo Alto, CA, where he has continued work on modeling of electrochemical systems. Recent projects have focused on batteries for grid-scale energy storage, advanced three-dimensional models that include electrochemical and thermal effects, and mathematical modeling of the Li/air battery.

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LOUIS HUTIN received the Young Author Award in the category of Solid State Science & Technology, for his paper, for "Schottky Barrier Height Extraction in Ohmic Regime: Contacts on Fully Processed GeOI Substrates" (JES, Vol. 156, No. 7, p. H522).

In 2007, Mr. Hutin received the joint International MS degree in micro and nanotechnologies from the Grenoble Institute of Technology (France), Politecnico di Torino (Italy), and EPFL (Switzerland). As a part of his training, he spent three months in 2006 at the Foundation for Research

and Technology-HELLAS (Heraklion, Greece) studying SiC nanostructures under the supervision of Konstantinos Zekentes. The next year he began PhD studies in micro and nanoelectronics at Grenoble University under the supervision of Gérard Ghibaudo, while joining the Electronic Nano Devices Laboratory at CEA Leti (Grenoble, France) directed by Simon Deleonibus and Olivier Faynot.

Mr. Hutin's research interests include modeling, simulation, characterization, and device integration of aggressively scaled single and multi-gate CMOS on silicon-on-insulator (SOI), SiGeOI, and GeOI substrates. In particular, his focus on Schottky MOSFETs led him to study the modeling of interfacial current at metal/germanium interfaces. Louis Hutin plans on defending his PhD thesis in October 2010.

Call for Nominations



The **VITTORIO DE NORA AWARD** was established in 1971 for contributions to the field of electrochemical engineering and technology; and consists of a gold medal, wall plaque, and a prize of \$7,500. The next award will be presented at the ECS spring meeting in Seattle, Washington, May 6-11, 2012.

Nominations and supporting documents should be sent to Gerardine Botte, Ohio University, Russ College of Engineering & Technology, 183 Stocker Center, Athens, OH 45701, USA; tel: 740.593.9670; e-mail: botte@ohio.edu. **Materials are due by May 1, 2011.**



The **HENRY B. LINFORD AWARD FOR DISTINGUISHED TEACHING** was established in 1981 for excellence in teaching in subject areas of interest to the Society; and consists of a silver medal, wall plaque, and a prize of \$2,500. The next award will be presented at the ECS spring meeting in Seattle, Washington, May 6-11, 2012.

Nominations and supporting documents should be sent to Gerald Frankel, Ohio State University, 477 Watts Hall, 2041 N College Road, Columbus, OH 43210-1124, USA; tel: 614.688.4128; e-mail: frankel.10@osu.edu. **Materials are due by May 1, 2011.**



The award of **ECS FELLOWS** was established in 1989 for individual contributions and leadership in the achievement of science and technology in the area of electrochemistry and solid-state sciences and current active participation of the affairs of ECS, and consists of a scroll, lapel pin, and announcement in a Society publication. This class of Fellows will be presented at the ECS fall meeting in Boston, Massachusetts, October 9-14, 2011.

Nominations and supporting documents should be sent to Prashant V. Kamat, University of Notre Dame, Radiation Laboratory, Notre Dame, IN 46556-0579, USA; e-mail: pkamat@nd.edu. **Materials are due by January 15, 2011.**

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How to apply...

For details on each award, including a list of requirements for award nominees, and in some cases, a downloadable nomination form, please go to the ECS website (www.electrochem.org) and click on the "Awards" link. This will take you to a general page that will then lead to the individual awards. The awards are grouped in one of four categories: Society Awards, ECS Division Awards, Student Awards, and ECS Section Awards. Click on one of these sub-links to find the individual award. Please see each for information about where nomination materials should be sent; or you may contact the ECS headquarters office by using the contact information on the awards Web page. For student awards, please see the Student News Section in this issue.

Visit
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and click on the "Awards" link.

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The **ORONZIO DE NORA INDUSTRIAL ELECTROCHEMISTRY FELLOWSHIP OF THE ELECTROCHEMICAL SOCIETY** was established in 2003 to assist a post-doctoral scientist or engineer in the research of the field of industrial electrochemistry, and consists of a \$30,000 scholarship for one year, twice renewable based on successful research progress as judged by the award's committee. The next award will be announced by the ECS spring meeting in Montréal, Canada, May 1-6, 2011.

Nominations and supporting documents should be sent to Albert L. Barnes, Industrie de Nora S.p.A., 625 East Street, Fairport Harbor, OH 44077-5668, USA; e-mail: al.barnes@denora.com. **Materials are due by January 1, 2011.**

Division Awards



The **BATTERY DIVISION RESEARCH AWARD** was established in 1958 to recognize outstanding contributions to the science and technology of primary and secondary cells and batteries and fuel cells. The award consists of a scroll, a prize of a \$2,000, travel assistance to the meeting if required, and membership in the Battery Division for as long as the winner is a Society member. The next award will be presented at the ECS fall meeting in Boston, Massachusetts, October 9-14, 2011.

Nominations and supporting documents should be sent to KM Abraham, E-KemSciences, 57 Colonial Rd., Needham, MA 02492-1612, USA; tel: 781.444.8453; e-mail: kmabraham@comcast.net. **Materials are due by March 15, 2011.**



The **TECHNOLOGY AWARD OF THE BATTERY DIVISION** was established in 1993 to encourage the development of battery and fuel cell technology. The award consists of a scroll, prize of \$2,000, travel assistance to the meeting if required, and membership in the Battery Division for as long as the winner is a Society member. The next award will be presented at the ECS fall meeting in Boston, Massachusetts, October 9-14, 2011.

Nominations and supporting documents should be sent to Stefano Passerini, Westfälische Wilhelm Universität Muenster, Institut für Physikalische Chemie, Correns Strasse 28/30, D-48149 Muenster, Germany; tel: +49 251.83.36026; e-mail: stefano.passerini@wwu.de. **Materials are due by March 15, 2011.**



The **CORROSION DIVISION H. H. UHLIG AWARD** was established in 1972 to recognize excellence in corrosion research and outstanding technical contributions to the field of corrosion science. The award consists of a scroll, prize of \$1,500, and travel assistance to meeting of award presentation (if required). The next award will be presented at the ECS fall meeting in Boston, Massachusetts, October 9-14, 2011.

Nominations and supporting documents should be sent to Douglas C. Hansen, University of Dayton Research Institute, Materials Engineering Division, 300 College Park, Dayton, OH 45469-0130, USA; tel: 937.229.4380; e-mail: douglas.hansen@udri.udayton.edu. **Materials are due by December 15, 2010.**



The **J. B. WAGNER, JR. AWARD OF THE HIGH TEMPERATURE MATERIALS DIVISION** was established in 1998 to recognize a young member of the Society who has demonstrated exceptional promise for a successful career in science and technology in the field of high temperature materials. The award consists of a scroll, a prize of

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\$1,000, and travel assistance (if needed) to the meeting where the award presentation will take place. The next award will be presented at the ECS fall meeting in Boston, Massachusetts, October 9-14, 2011.

Nominations and supporting documents should be sent to Timothy R. Armstrong, Carpenter Technology, PO Box 14662, Reading, PA 19612, USA; e-mail: tarmstrong@cartech.com. **Materials are due by January 1, 2011.**



The **MANUEL M. BAIZER AWARD OF THE ORGANIC AND BIOLOGICAL ELECTROCHEMISTRY DIVISION** was established in 1992 for outstanding scientific achievements in the electrochemistry of organics. The award consists of a scroll, a prize of \$1,000, and travel assistance (if needed) to the meeting where the award presentation will take place. The next award will be presented at the ECS spring meeting in Seattle, Washington, May 6-11, 2012.

Nominations should include a copy of the nominee's *curriculum vitae*, plus a maximum of twelve pages consisting of a letter of nomination, a brief biological sketch that can be included with the award announcement, and no more than three supporting letters. No individual may write in support of more than one candidate. The materials should be sent (preferably in electronic form) to the Chair of the Baizer Award Committee, Jean Lessard, Department of Chemistry, Université de Sherbrooke, Québec, Canada J1K 2R1; e-mail: Jean.Lessard@USherbrooke.ca. **Materials are due by January 15, 2011.**



The **MAX BREDIG AWARD IN MOLTEN SALT CHEMISTRY OF THE PHYSICAL AND ANALYTICAL ELECTROCHEMISTRY DIVISION** was established in 1984 to recognize excellence in molten salt chemistry research and consists of a scroll and a prize of \$1,500. The next award will be presented at the ECS fall meeting in Honolulu, Hawaii, October 7-12, 2012.

Nominations and supporting documents should be sent to Paul C. Trulove, Chemistry Department, U.S. Naval Academy, 572M Holloway Rd., Stop 9B, Annapolis MD 21402-5026, USA; tel: 410.293.6622, e-mail: trulove@usna.edu. **Materials are due by January 31, 2011.**

significance to this field. The award consists of a plaque and a prize of 2,000 Euros. The winner will be invited to deliver the Gerischer Prize Lecture during an appropriate symposium of an international meeting (either the Spring or Fall meeting in 2011) where the award will be given.

Nominations and supporting documents should be sent to Claude Levy-Clement, CNRS, ICMPE, CNRS UPR 7182, 2-8 rue Henri Dunant, 94320 Thiais, France; fax: +33 49781203; e-mail: levy-clement@glvt-cnrs.fr. **Materials are due by November 1, 2010.**

The **ALESSANDRO VOLTA MEDAL OF THE EUROPEAN SECTION** was established in 1998 to recognize excellence in electrochemistry and solid-state science and technology research, and consists of a silver medal and \$500. The next award will be presented at the ECS meeting in Montreal, Canada, May 1-6, 2011.

Nominations and supporting documents should be sent to Pawel J. Kulesza, University of Warsaw, Department of Chemistry, Pasteura 1, PL-02-093 Warsaw, Poland; tel. +48 228220211, ext. 289 (office) or ext. 277 (lab); fax: +48 22 8225996; e-mail: pkulesza@chem.uw.edu.pl. **Materials are due by October 4, 2010.**

Section Awards

The **W. LASH MILLER AWARD OF THE CANADIAN SECTION** was established in 1967 for the excellence of the candidate's publications and/or technical contributions in the field of electrochemical science and technology and/or solid state science and technology. The candidate must have demonstrated independent research in academia, industry or governmental laboratories. The award consists of a prize of \$1,000 CAN. The next award will be presented at a meeting of the Canadian Section in 2011 during which the award recipient will present a lecture on a subject of major interest to him/her in the field of electrochemical science and technology and/or solid state science and technology. It may relate to the citation of the Award, or to current activity.

Nominations and supporting documents should be sent to Alexandre G. Brolo, University of Victoria Chemistry, PO Box 3605, Victoria, BC, Canada V8W-3V6; tel: 250.721.7167, e-mail: agbrolo@uvic.ca. **Materials are due by December 31, 2010.**

The **HEINZ GERISCHER AWARD OF THE EUROPEAN SECTION** was established in 2001 to recognize an individual or a small group of individuals (no more than three) who have made an outstanding contribution to the science of semiconductor electrochemistry and photoelectrochemistry, including the underlying areas of physical and materials chemistry of