


Debra Rolison

Guest Editor for this issue of *MRS Bulletin*

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 Rolison heads the Advanced Electrochemical Materials section at the NRL, where her research focuses on multifunctional nanoarchitectures for rate-critical applications. She received a PhD degree in chemistry from the University of North Carolina at Chapel Hill in 1980 and is a Fellow of the American Association for the Advancement of Science, the Association for Women in Science, and the Materials Research Society (inaugural class). Rolison received the 2011

ACS Award in the Chemistry of Materials and the 2012 C.N. Reilly Award of the Society for Electroanalytical Chemistry. When she is not otherwise bringing the importance of nothing and disorder to materials chemistry, she writes and lectures widely on issues affecting women in science, including proposing Title IX assessments of science and engineering departments. She is the author of over 200 articles and holds 24 patents.


Linda F. Nazar

Guest Editor for this issue of *MRS Bulletin*

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Nazar is professor and Senior Canada Research Chair in solid-state materials at the University of Waterloo in Ontario, Canada. She received her PhD degree in chemistry (University of Toronto, 1986) and joined Exxon Corporate Research in Annandale, NJ, as a postdoctoral fellow. She is a founding member of the Waterloo Institute for Nanotechnol-

ogy, where her research is focused on materials for energy storage and conversion, in areas that span Li-ion and Na-ion batteries, Li-sulfur and Li-air batteries, and fuel cell catalysts. She received the Electrochemistry Society Battery Research award in 2009, the International Battery Association and Rio Tinto Alcan awards in 2011, and was a 2010 Moore Distinguished Scholar at the California Institute of Technology.


K.M. Abraham

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Abraham is a research professor at Northeastern University and the principal consultant of E-KEM Sciences. After receiving his PhD degree in chemistry from Tufts University, Medford, Massachusetts, Abraham spent a significant part of his professional career at EIC Laboratories, also in Massachusetts. Among his many Li battery contributions are the demonstration of the first practical rechargeable Li battery with

long cycle life and the invention of the non-aqueous Li-air battery. He won the Electrochemical Society battery research award, the NASA group achievement award for the lithium battery team, and was elected ECS Fellow.


Khalil Amine

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Amine is a senior scientist and manager of the Advanced Lithium Battery Technology group at Argonne National Laboratory. He earned his master's degree in chemistry and his PhD degree in materials science from the University of Bordeaux, France. He is an active member of the Electrochemical Society, the Materials Research Society, and the American Ceramic

Society. His research interests include advanced materials and battery systems for HEV, PHEV, EV, satellite, and military and medical applications.


Timothy S. Arthur

Materials Research Department, Toyota Research Institute of North America, Ann Arbor, MI, USA.

Arthur currently works for the Materials Research Department in the Toyota Research Institute of North America. His current research interests revolve around finding and analyzing new materials for post Li-ion battery technology. He did his graduate work with Amy Prieto at Colorado State University, studying the electropolymerization of solid-state electrolytes for three-dimensional batteries and the solution-phase synthesis of magnesium nanoparticles. He is a current member of the Electrochemical Society and the American Chemical Society.


Daniel J. Bates

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Bates is currently a graduate research assistant at Colorado State University. He is interested in developing new materials for lithium ion batteries. His focus has been on electrodeposition of separator materials. This work is done under the co-supervision of Amy Prieto and Mike Elliott. Dan received a BS degree in chemistry from the University of Wisconsin, Eau Claire.

While attending Eau Claire, Dan worked in a research laboratory for Michael Carney. The focus of his undergraduate work was the synthesis and characterization of catalysts for polyethylene production.


Daniel Bélanger

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Bélanger is a professor in the Département de Chimie at the l'Université du Québec à Montréal. He received his PhD degree in Sciences de l'Énergie from the Institut National de la Recherche Scientifique of the Université du Québec (Canada) in 1985 followed by postdoctoral studies at the Massachusetts Institute of Technology (1986–1987). His current research

interests include chemical modification of surfaces, developing new materials for energy storage (e.g., electrochemical capacitors), and environmental applications (e.g., nitrate and CO₂ reduction).


Thierry Brousse

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Brousse is a full professor of materials science at the University of Nantes. He received his engineer degree (1987) and PhD degree (1991) from the University of Caen. After a few years as an analytical chemistry engineer, he joined the University of Nantes as an assistant professor at Polytech Nantes and received a full professor position in 2005 when he became director of the Materials Science and Engineering lab

(LGMPA). His research focuses on materials for electrochemical energy storage (electrochemical capacitors, secondary batteries, and asymmetric devices), with a particular emphasis on alternative materials for the negative electrode in Li-ion batteries and innovative and/or modified inorganic materials for electrochemical capacitors.

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Bruce is a Wardlaw Professor of Chemistry at the University of St. Andrews, Scotland. His primary research interests include the synthesis and characterization of new materials (extended arrays and polymers) with new properties or combinations of properties, especially energy materials, and rechargeable lithium batteries. His research has been recognized by a number of awards and fellowships, including from the

Royal Society, the Royal Society of Chemistry, and the Electrochemical Society. He is a Fellow of the Royal Society (UK Academy of Sciences).

**Zonghai Chen**

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Chen is a chemist at Argonne National Laboratory. He received his BS and MS degrees in chemistry from the University of Science and Technology of China and his PhD degree in chemistry from Dalhousie University in Canada in 2004. He is an active member of the Electrochemical Society and Materials Research Society. His research interests include functional electro-

lytes, advanced electrode materials for lithium-ion batteries, as well as material behavior under extreme conditions such as high temperature, low temperature, high rate operation, and abuse conditions.

**Nicolas Cirigliano**

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Cirigliano is pursuing his PhD in materials science and engineering at the University of California, Los Angeles (UCLA) under the guidance of Professor Bruce Dunn. He received his MS in materials science and engineering from UCLA in 2010 for his work on sol-gel derived nanostructured biofuel cells. His current projects involve geometric modeling and fabrication of three-dimensional battery electrode architec-

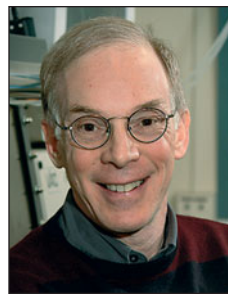
tures for lithium-ion and metal-air batteries.

**Olivier Crosnier**

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Crosnier is an assistant professor of materials science at Polytech Nantes. He received his PhD degree in 2001 from the University of Nantes and then occupied different postdoctoral positions at the University of Waterloo and the University of Bordeaux, working on innovative negative and positive materials for Li-ion batteries. He joined the University of Nantes as a faculty member in 2006. His research focuses

on nanomaterials for Li-ion batteries and electrochemical capacitors, with special attention to device design and electrothermal performance.

**Bruce Dunn**

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Dunn is the Nippon Sheet Glass Professor of Materials Science and Engineering at UCLA. He was a staff scientist at the General Electric Corporate Research and Development Center before joining UCLA. His research interests concern the synthesis of inorganic materials and characterization of their electrical, optical, biological, and electrochemical properties. A continuing theme in his research is the use of

sol-gel methods to synthesize materials with designed chemistry and microstructure. His recent work on electrochemical energy storage includes three-dimensional batteries and pseudocapacitor materials. Among the honors he has received are a Fulbright research fellowship and two awards from the U.S. DOE for his research in materials science.

**Laurence J. Hardwick**

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Hardwick joined Peter G. Bruce's group as a research fellow in the study of catalysts for the lithium-air battery. His research interests include the use of *in situ* techniques, such as Raman, Fourier transform infrared spectroscopy, and atomic force microscopy, to investigate processes in various electrochemical systems. He received a MChem in chemistry from the University of Southampton and a PhD degree in chemistry from ETH-Zurich. He con-

ducted his postdoctoral work at the Lawrence Berkeley National Laboratory. He has authored or co-authored over 25 publications in the field of Li-ion and Li-air batteries.

**Derek C. Johnson**

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Johnson received his BS degree in environmental engineering from the University of Florida (2000). He then received a MS in chemical engineering (2003) and a PhD degree in chemical and biological engineering (2006) from Colorado State University under the tutelage of Professor David S. Dandy. He joined Prieto Battery, Inc. as senior scientist and engineer after completing a postdoctoral fellowship in

inorganic chemistry with Professor Amy L. Prieto. His research interests are multidisciplinary and span the fields of chemical engineering, environmental engineering, and nanoscale material science, with direct applications to renewable energy and water resources.

**Dong-Ju Lee**

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Lee received his BS degree in 2008 and his MS degree in 2011 both in chemical engineering from Hanyang University. He is currently a PhD candidate in the Department of Energy Engineering at Hanyang University. His primary research interests include synthesis, characterization, and electrochemical properties of electrode materials for energy storage and conversion systems.

**Jeffrey W. Long**

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Long is a senior staff scientist in the Surface Chemistry Branch at the U.S. Naval Research Laboratory in Washington, DC, where his research centers on developing nanostructured materials for electrochemical power sources and separation/filtration. Before coming to NRL in 1997, he received a PhD in chemistry from the University of North Carolina at Chapel Hill in 1997 and a BS from Wake Forest University in 1992.

**Peter Malati**

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Malati is a materials science and engineering graduate student at the University of California, Los Angeles (UCLA) under Professor Bruce Dunn. He received his MS degree in materials science in 2007 and his BS degree in chemistry in 2005 from UCLA. While his specialties range from synthesis of organic-inorganic hybrid materials using sol-gel to battery materials synthesis, design, and fabrication, Malati's current

research focuses on design and fabrication of three-dimensional batteries.

**James M. Mosby**

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Mosby is currently working for Prieto Battery, Inc. as part of a team developing 3D Li-ion batteries. He received a BS in chemistry from the Colorado School of Mines working with Patrick MacCarthy investigating humic substances. He received a PhD degree in chemistry from Colorado State University in 2010 under Amy Prieto. His work was focused on the electrodeposition of intermetallic anode materials from aqueous solutions.

**Emilie Perre**

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Perre is a postdoctoral researcher at the University of California, Los Angeles (UCLA) under Professor Bruce Dunn. She received a PhD (2010) in materials chemistry at the University of Toulouse Paul Sabatier (France) and Uppsala University (Sweden). Her PhD work was focused on the synthesis and characterization of three-dimensional Li-ion batteries. Her current research focuses on the design, synthesis, and

characterization of materials for Li-ion batteries and supercapacitor applications.

**Amy L. Prieto**

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Prieto is an assistant professor in the chemistry department at Colorado State University, as well as a co-founder of Prieto Battery, Inc. She received her undergraduate degree in chemistry and philosophy from Williams College. She received her PhD degree at the University of California, Berkeley, where she was a Bell Labs Fellow. Her postdoctoral work was completed at

Harvard University. There she was named one of the first L'Oreal USA fellows.

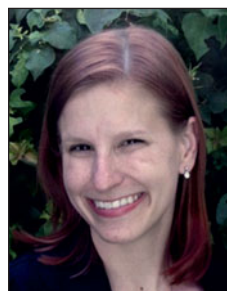
She has been named the 2011 ExxonMobil Faculty Fellow. Her research interests are focused on the development of novel synthetic methods for applications in high-power density Li-ion batteries, photovoltaics using earth-abundant, non-toxic materials, and hydrogen storage.

**Matthew T. Rawls**

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Rawls is a senior scientist at Prieto Battery Inc. He recently completed a postdoctoral fellowship at NREL working on the synthesis (bulk and electro-initiated), characterization, and application of novel polymeric electronic materials applied to photocatalytic water splitting and organic photovoltaics. He graduated with a PhD degree from Colorado State University in 2007, with an emphasis in electrochemical applications related to solar energy. The work

performed during Rawls' graduate and postdoctoral research lead to multiple peer-reviewed publications, including a book chapter on photo-initiated charge separation. He is currently studying electrodeposition of solid polymer electrolytes for battery applications.

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Sassin received a BS in chemistry from Southwestern University in 2001 and a PhD degree in chemistry from the University of California, Irvine in 2007. She is presently a staff scientist in the Surface Chemistry Branch at the U.S. Naval Research Laboratory, where she designs, synthesizes, and characterizes 3D hybrid nanostructures for applications in energy storage.

**Wataru Sugimoto**

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Sugimoto is an associate professor of materials and chemical engineering at Shinshu University. He received a PhD degree in 1999 from Waseda University and has been a faculty member of Shinshu University since then. His research focuses on nanomaterials for electrochemical charge storage and conversion (electrochemical capacitors and fuel cells), with a particular emphasis on the synthesis and application of nanosheets and nanoparticles.

**Yang-Kook Sun**

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Sun is a professor in the WCU department of energy engineering at Hanyang University. He received his PhD in chemical engineering at Seoul National University in 1992 and is an active member of the Korean Academy of Science and Technology. His research interests are the energy storage materials for Li-ion batteries and lithium-metal free Li-S and Li-air batteries, with a particular emphasis on the

synthesis and application of core-shell structured concentration materials. He received a research award from the Electrochemical Society, Inc. (2007) for his outstanding research contributions to the field of novel electrochemical technologies.