



Mark T. Lusk

Guest Editor for this issue of *MRS Bulletin*

Department of Physics, Colorado School of Mines, Golden, Colorado 80401, USA; tel. 303-273-3675; and e-mail mlusk@mines.edu.

Lusk is a professor of physics at the Colorado School of Mines where he is the director of the Golden Energy Computing Organization and the lead theorist for the NSF Renewable Energy Materials Research Science and Engineering Center. He studied solid-state physics at the U.S. Naval Academy and was subsequently

a naval nuclear engineer. After an MS degree in electrical engineering at Colorado State University, he obtained a PhD degree in applied mechanics at the California Institute of Technology. He has been a professor at the Colorado School of Mines for 16 years. His current research focuses on theoretical and computational queries related to the excited states of nanostructured assemblies with an emphasis on quantum transport and optical interactions with matter.



Ann E. Mattsson

Guest Editor for this issue of *MRS Bulletin*

Computational Shock and Multiphysics MS 1322, Sandia National Laboratories, Albuquerque, New Mexico 87185-1322, USA; tel. 505-844-9218; and e-mail aematts@sandia.gov.

Mattsson is a staff member at Sandia National Laboratories. She obtained a MS degree in engineering physics and subsequently a PhD in theoretical physics from Chalmers University of Technology, Gothenburg, Sweden. After a postdoctoral period with Professor Walter Kohn

at the University of California, Santa Barbara, she held an assistant professorship at the Royal Institute of Technology, Stockholm, Sweden. She has been at Sandia for 10 years. Her main interest is in exchange-correlation functionals for density functional theory (DFT), but also how these functionals via high-performance computing use of DFT can make a real impact on modeling and simulation efforts at the engineering scales.



Gerbrand Ceder

Massachusetts Institute of Technology, Cambridge, MA 02139, USA; tel. 617-253-1581; and e-mail gceder@mit.edu.

Ceder is the R.P. Simmons Professor of Materials Science and Engineering at the Massachusetts Institute of Technology (MIT). He has worked for 15 years in the Li-battery field, optimizing several new electrodes materials and has regularly served as scientific advisor to companies and investors in this area. In addition, Ceder is the founder of Computational Modeling Consultants and

Pellion Technologies. His research interests lie in the design of novel materials for energy generation and storage, including battery materials, hydrogen storage, thermoelectrics, electrodes for fuel cells, and photovoltaics. Ceder has received the MRS Gold Medal, and the Battery Research Award from the Electrochemical Society for his work on understanding battery materials, the Career Award from the National Science Foundation, and the Robert Lansing Hardy Award from The Metals, Minerals and Materials Society. He also has received three awards from the graduate students at MIT for best teaching.



Alberto Franceschetti

National Renewable Energy Laboratory, Golden, Colorado 80401, USA; tel. 303-384-6645; and e-mail Alberto.franceschetti@nrel.gov.

Franceschetti received his PhD degree in condensed matter physics from SISSA in Trieste, Italy, in 1994. He then joined the Solid State Theory Group at NREL as a postdoc and later as a research associate, working on the electronic and optical properties of semiconductor alloys, superlattices, and nanostructures. From 2000 to 2004, he was a research associate professor at Vanderbilt University and Oak Ridge

National Laboratory, where he worked in collaboration with the electron microscopy group at ORNL on topics ranging from nanocatalysis, to superconductor grain boundaries, to semiconductor/insulator interfaces. In 2004, he returned to NREL as a senior scientist. Currently his main research interests are in the area of semiconductor nanostructures and materials design from first principles.

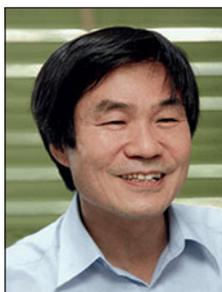


Geoffroy Hautier

Massachusetts Institute of Technology, Cambridge, MA 02139, USA; tel. 617-258-0775; and e-mail hautierg@mit.edu.

Hautier is a PhD degree student in the department of Materials Science and Engineering at the Massachusetts Institute of Technology (MIT). He earned a materials engineering degree from the Universite Libre de Bruxelles and an engineering degree from the Ecole Centrale Paris in 2004. From 2004 to 2006, he conducted research at IMEC, Belgium, on nanowire growth. His current research focuses on the

prediction of new lithium ion battery cathode materials by combining data mining approaches with high-throughput *ab initio* computations. Hautier is a Total MIT Energy Initiative and a Belgian American Education Foundation fellow. He also was a recipient of a Fonds Wetenschappelijk Onderzoek scholarship.



Jisoon Ihm

Seoul National University, Seoul, 151-747, Korea; tel. 822-880-6614; and e-mail jihm@snu.ac.kr.

Ihm is a Seoul National University Distinguished Professor in the Department of Physics and Astronomy and director of the Center for Theoretical Physics. He received his PhD degree in physics from UC Berkeley in 1980. He worked at MIT, AT&T Bell Labs, and Bellcore. He has been involved in the development of computational materials physics based on electronic and total energy calculations. His major research topics include the electronic

structure and transport in carbon nanotubes and graphene, hydrogen storage nano-materials design, and novel phase-change-memory materials. He is a fellow of APS and appointed as a National Scientist of Highest Honor in Korea.



Anubhav Jain

Massachusetts Institute of Technology, Cambridge, MA 02139, USA; tel. 617-253-8127; and e-mail anubhavj@mit.edu.

Jain is a PhD candidate at the Massachusetts Institute of Technology in the Department of Materials Science and Engineering. He received a bachelor's degree in applied and engineering physics from Cornell University and currently holds a Department of Energy Computational Science graduate fellowship. Jain is using large-scale density functional theory calculations to create a materials encyclopedia for the design

and understanding of new materials across a variety of applications including Li ion batteries, Hg capture, and solar photovoltaics.



Seung-Hoon Jhi
Department of Physics and Division of Advanced Materials Science, Pohang University of Science and Technology, Pohang 790-784, Republic of Korea; tel. +82-54-279-2094; and e-mail jhish@postech.ac.kr.

Jhi is an associate professor in the Department of Physics and Division of Advanced Materials Science of Pohang University of Science and Technology (POSTECH). His primary research interest is in the area of hydrogen storage materials, graphene, and phase change materials. He got his PhD in 1998 from Seoul National University and worked as a postdoctoral researcher at the University of California at Berkeley and Lawrence Berkeley National Laboratory. Since then, he worked as a research scientist at Nanomix, Inc., USA until 2004 and joined POSTECH in 2005.

is currently a postdoctoral researcher at the IESL-FORTH, Greece. His research focuses on the theoretical investigation of catalytic properties and growth mechanisms of metal nanoparticles, energy-related problems (hydrogen storage, lithium batteries), and magnetism (magnetic clusters and nanoparticles).



Giannis Mpourmpakis
Institute of Electronic Structure and Laser Foundation for Research and Technology, Greece; tel. +30-2810-391840; and e-mail gmpourmp@iesl.forth.gr.

Mpourmpakis graduated from the chemistry department at the University of Crete, Greece, where he also earned his MS and PhD degrees. He joined the chemical engineering department at the University of Delaware in 2006 as a postdoctoral researcher. He was recently awarded a Marie-Curie Fellowship by the European Commission and

is currently a postdoctoral researcher at the IESL-FORTH, Greece. His research focuses on the theoretical investigation of catalytic properties and growth mechanisms of metal nanoparticles, energy-related problems (hydrogen storage, lithium batteries), and magnetism (magnetic clusters and nanoparticles).



Kai Nordlund
University of Helsinki, Finland; tel. +358-9-19150007; and e-mail kai.nordlund@helsinki.fi.

Nordlund is professor of computational materials physics at the University of Helsinki. He got his PhD in 1995 at the University of Helsinki, spent two years as a postdoctoral researcher at the University of Illinois in Urbana-Champaign 1996-1997, and was appointed professor in 2003. His research interests include atom-level studies of plasma-wall interactions in fusion reactors, nonequilibrium processes in nanoclusters, nanotubes and nanowires, and ion and

neutron radiation effects in all classes of materials.



Shyue Ping Ong
Massachusetts Institute of Technology, Cambridge, MA 02139, USA; tel. 617-715-4306; and e-mail shyue@mit.edu.

Ong is a graduate student in the Department of Materials Science and Engineering at the Massachusetts Institute of Technology. He graduated from the University of Cambridge, UK with First Class Honors in 1999 and was awarded the university's Institute of Civil Engineers Baker Prize. His undergraduate studies were funded by the Singapore Public Service Commission Overseas Merit Scholarship. Ong's research

focuses on the application of first-principles modeling to study of the phase equilibria, transport, and other properties of materials for energy storage. His work spans from first-principles thermodynamics of solid-state cathode materials to the modeling of complex liquid electrolyte systems.



Peter M. Oppeneer
Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; tel. +46 18 471 3748; and e-mail: peter.oppeneer@fysik.uu.se.

Oppeneer is professor in theoretical solid-state physics at Uppsala University, Sweden, since 2004, with specialization in computational materials science. He studied theoretical physics in Utrecht and Amsterdam, the Netherlands. He started with computational studies of *f*-electron systems as a postdoctoral researcher in Darmstadt and continued these as a staff researcher

in Dresden, Germany. Research on this topic is a passion that he continues to enjoy.



Amadeu K. Sum
Colorado School of Mines, Golden, CO 80401, USA; tel. 303-273-3873; and e-mail asum@mines.edu.

Sum is an assistant professor in the chemical engineering department at the Colorado School of Mines, is co-director for the CSM Center for Hydrate Research, and is a research associate professor at Keio University as part of the Global COE Program. Sum received his PhD in chemical engineering from the University of Delaware and BS and MS degrees in chemical engineering from CSM. His postdoctoral studies were at

the University of Wisconsin, Madison. Sum is a recipient of the DuPont Young Professor Award. His research focuses on clathrate hydrates (formation, dissociation, aggregation, deposition, jamming, inhibition, and molecular thermodynamics) and biophysics of biomolecular structures.



Dionisios (Dion) Vlachos
University of Delaware, Newark, DE 19716, USA; tel. 302-831-2830; and e-mail vlachos@udel.edu.

Vlachos is the Elizabeth Inez Kelley Professor of chemical engineering at the University of Delaware, the director of the Center for Catalytic Science and Technology, and the director of the Catalysis Center for Energy Innovation, an Energy Frontier Research Center funded by the Department of Energy. Vlachos obtained a five years diploma in chemical engineering from the National Technical University of Athens, in Greece, in 1987, and MS

and PhD degrees from the University of Minnesota in 1990 and 1992, respectively. He is the recipient of an ONR Young Investigator Award and a NSF Career Award. He is a member of the American Association for the Advancement of Science (AAAS). His main research interests are multiscale modeling and experiments along with their application to renewable energy, catalysis and portable microchemical devices for power generation, biofuels, growth of nanomaterials, and microporous thin films.



Dennis Whyte
MIT Plasma Science & Fusion Center, Cambridge, MA 02139, USA; tel. 617-253-1748; and e-mail whyte@psfc.mit.edu.

Whyte is a professor of Nuclear Science and Engineering at the Massachusetts Institute of Technology and is co-director of the Plasma Surface Interactions Science Center. He was educated at the University of Saskatchewan and University of Quebec, from which he received his PhD in 1992. Whyte has more than 200 peer-reviewed publications on magnetic confinement fusion research topics such as plasma

spectroscopy, boundary plasma physics, disruption mitigation, material erosion, and tritium fuel retention. Whyte is a Fellow of the American Physical Society.

**Brian Wirth**

Department of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996, USA; tel. 865-974-2554; and e-mail bdwirth@utk.edu.

Wirth is a professor and Governor's Chair of Computational Nuclear Engineering in the Department of Nuclear Engineering at the University of Tennessee, Knoxville, which he joined in July 2010. He received a BS degree in nuclear engineering from the Georgia Institute of Technology in 1992 and a PhD degree in mechanical engineering from the University of California, Santa Barbara, in 1998, where he was a Department of Energy Nuclear Engineering graduate fellow. Following several years in the High Performance Computational Materials Science Group at Lawrence Livermore National Laboratory, Wirth joined the faculty at the University of California, Berkeley, as an assistant professor of nuclear engineering in 2002. He was promoted to associate professor in 2006. His research interests involve the combination of multiscale modeling and advanced microstructural characterization to develop improved understanding and models of microstructure-property relationships and microstructural evolution during processing and service in hostile environments, with an emphasis on irradiation effects. He has received the 2007 Fusion Power Associates David J. Rose Excellence in Fusion Engineering Award and the 2003 Presidential Early Career Award for Scientists and Engineers (PECASE).

ment of Energy Nuclear Engineering graduate fellow. Following several years in the High Performance Computational Materials Science Group at Lawrence Livermore National Laboratory, Wirth joined the faculty at the University of California, Berkeley, as an assistant professor of nuclear engineering in 2002. He was promoted to associate professor in 2006. His research interests involve the combination of multiscale modeling and advanced microstructural characterization to develop improved understanding and models of microstructure-property relationships and microstructural evolution during processing and service in hostile environments, with an emphasis on irradiation effects. He has received the 2007 Fusion Power Associates David J. Rose Excellence in Fusion Engineering Award and the 2003 Presidential Early Career Award for Scientists and Engineers (PECASE).

**David T. Wu**

Colorado School of Mines, Golden, CO 80401, USA; tel. 303-384-2066; and e-mail dwu@mines.edu.

Wu is an associate professor in chemistry and chemical engineering at the Colorado School of Mines and is an associate director for the CSM Center for Hydrate Research. Wu received his PhD in chemistry from the University of California at Berkeley and his BA in chemistry from Harvard University. He carried out postdoctoral studies in physics at Cambridge University, UK, and

in chemical engineering at the University of California at Santa Barbara. Wu's research focuses on physical chemical phenomena in hydrates, soft and granular materials, and theoretical and computational statistical mechanics.

**Donghua Xu**

University of California, Berkeley, CA 94720-1730, USA; tel. 510-643-3281; and e-mail xudh@nuc.berkeley.edu.

Xu is an assistant research engineer in the Department of Nuclear Engineering at the University of California, Berkeley, where he also worked as a postdoctoral researcher from 2005 to 2008. He received his PhD degree in materials science from the California Institute of Technology in 2005, with his thesis concentrated on the development and understanding of bulk metallic glasses (non-crystalline metals). Xu's current

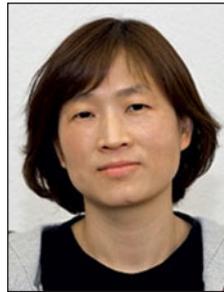
research is centered on the combined experimental characterization and cluster-dynamics computation of radiation defect evolution in structural materials.

**Kenji Yasuoka**

Department of Mechanical Engineering, Keio University, Japan; tel. +81 (45) 566-1523; and e-mail yasuoka@mech.keio.ac.jp.

Yasuoka is a professor in the Mechanical Engineering Department at Keio University. Yasuoka received his PhD in applied physics from Nagoya University and his BS in physics and MS in applied physics from Nagoya University. Yasuoka is also a recipient of the Gordon Bell Prize in 2000 and 2009. His research focuses on clathrate hydrate, nucleation phenomena of vapor-liquid, liquid-vapor, liquid-solid, micelle formation, liquid

crystal, aquaporin, and high-performance computing.

**Yoonsuk Yun**

Laboratory of Reactor Physics and Systems Behaviour, Paul Scherrer Institut, CH-5232 Villigen PSI, Switzerland; tel. +41 56 310 2038; and e-mail yoonsuk.yun@psi.ch.

Yun is a researcher in the Laboratory of Reactor Physics and Systems Behaviour at the Paul Scherrer Institut, Switzerland, since January 2010. She received her PhD in 2006 from KyungHee University, South Korea, and worked at the Korea Atomic Energy Research Institute (2006–2007) and Uppsala University, Sweden (2007–2009) as postdoctoral researcher. Her

main research interests lie in computational simulation and modeling of nuclear fuel materials, and her current research focuses mainly on analysis of nuclear fuel behavior under loss-of-coolant accident conditions. She is member of the expert group on Multi-scale Modeling of Fuels (M2F), OECD/NEA.



Journal of MATERIALS RESEARCH
CALL FOR PAPERS
Submission Deadline—June 28, 2011

Advances in Mechanics of One-Dimensional Micro/Nanomaterials

JMR Special Focus Issue, February 2012

www.mrs.org/jmr



The Leader in Vacuum Valves
www.vatvalve.com

Vacuum Valves

