

**Martin L. Green**

Chair of the organizing committee for this issue of *MRS Bulletin*

National Institute of Standards and Technology, Gaithersburg, MD 20899, USA; tel. 301-975-8496; and email [martin.green@nist.gov](mailto:martin.green@nist.gov).

Green is a group leader in the Material Measurement Laboratory at the National Institute of Standards and Technology (NIST). Projects in his group involve measurement science and fundamental properties of functional materials, as well as materials for sustainable development applications. He has BS (1970) and MS

(1972) degrees from the Polytechnic Institute of Brooklyn, and a PhD (1978) degree in materials science from MIT. Green served as president of the Materials Research Society in 2001 and is an MRS Fellow.

**Laura Espinal**

Member of the organizing committee for this issue of *MRS Bulletin*

Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD 20899-8520, USA; tel. 301-975-8979; and email [laura.espinal@nist.gov](mailto:laura.espinal@nist.gov).

Espinal is a materials scientist at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD. Her research involves the development of sorbent properties and *in situ* structural diagnostic tools to enable the rational design of carbon capture materials. Espinal

received her PhD in materials science in 2005 from the University of Connecticut. Before joining NIST, she was a postdoctoral research scientist in the carbon sequestration group at Schlumberger-Doll Research and participated in a cross-career training program in petrophysics at Schlumberger Carbon Services.

**Enrico Traversa**

Member of the organizing committee for this issue of *MRS Bulletin*

Xi'an Jiaotong University, China; tel. +86-29-82668767; and email [traversa@mail.xjtu.edu.cn](mailto:traversa@mail.xjtu.edu.cn).

Traversa is the director of the Department of Fuel Cell Research at the International Center for Renewable Energy, Xi'an Jiaotong University, China. He joined the University of Rome Tor Vergata in 1988, where he is a professor of Materials Science and Technology. From January 2009 to March 2012, he was a principal

investigator at the International Research Center for Materials Nanoarchitectonics at the National Institute for Materials Science (NIMS), Tsukuba, Japan, leading a unit on sustainability materials. He earned his Laurea (Italian doctoral degree) in 1986 in chemical engineering from the University of Rome La Sapienza. His research interests are in nanostructured materials for environment, energy, and healthcare, with special attention to sustainable development. He is an author of more than 480 scientific papers (more than 300 of them published in refereed international journals) and 15 patents. He is the 2011 recipient of the Ross Coffin Purdy Award of the American Ceramic Society. He is currently an associate editor for the *Journal of Nanoparticle Research*.

**Eric J. Amis**

Member of the organizing committee for this issue of *MRS Bulletin*

United Technologies Research Center, East Hartford, CT 06108, USA; tel. 860-610-7661; and email [AmisEJ@utrc.utc.com](mailto:AmisEJ@utrc.utc.com).

Amis is the director of physical sciences at United Technologies Research Center (UTRC). Prior to UTRC, he spent 15 years in leadership roles at the National Institute of Standards and Technology (NIST) in the Materials Science and Engineering Laboratory, including 10 years in the Polymers Division. He earned a PhD degree

in chemistry from the University of Wisconsin-Madison. At UTRC, he is responsible for research and development in materials science, chemistry, chemical engineering, structural integrity, applied physics, and measurement science. He is a Fellow of the Materials Research Society, the American Physical Society (APS), and the Polymeric Materials: Science and Engineering Division of the American Chemical Society (ACS). His research specialties are combinatorial and high-throughput methods for advanced materials, nanomaterial characterization, and soft matter physics. He has 150 peer-reviewed publications.

**Diran Apelian**

Metal Processing Institute, Worcester Polytechnic Institute, Worcester, MA 01609, USA; tel. 508-831-5992; and email [dapelian@wpi.edu](mailto:dapelian@wpi.edu).

Apelian is the Howmet Professor of Engineering and director of the Metal Processing Institute at the Worcester Polytechnic Institute. He received his BS degree from Drexel University and his ScD from MIT. During 2008/2009, he served as president of TMS. Apelian is a Fellow of TMS, ASM, and APMI; he is a member of the National Academy of Engineering (NAE) and the Armenian

Academy of Sciences.

**Ellyn S. Beary**

Montgomery Village, MD, 20886-4923, USA; tel. 301-529-4518; and email [esbeary@yahoo.com](mailto:esbeary@yahoo.com).

Beary retired from the National Institute of Standards and Technology in 2007 as senior scientific advisor in chemical science and technology. Since her retirement, she has remained active in the areas of biofuels and sustainability. She served on the steering committee of the International Congress on Sustainability Science and Engineering (2009 and 2011), chairing sessions on standards and protocols

and their relationship to sustainable development. She is a charter member of AIChE's Institute for Sustainability and served on the governing board from 2007–2011 as co-chair of their youth council.

**Markus J. Buehler**

Massachusetts Institute of Technology, Cambridge, MA 02139, USA; tel. 617-452-2750; and email [mbuehler@mit.edu](mailto:mbuehler@mit.edu).

Buehler is an associate professor in the Department of Civil and Environmental Engineering at the Massachusetts Institute of Technology. Buehler's research focuses on bottom-up modeling and simulation of structural and mechanical properties of biological and synthetic materials, with a specific focus on materials failure from a molecular perspective. One of his principal interests is the design of materials that, while being

manufactured with low energy use and from abundant and intrinsically poor building blocks, achieve superior engineering properties.



#### David Cahen

Weizmann Institute of Science, Israel;  
email [david.cahen@weizmann.ac.il](mailto:david.cahen@weizmann.ac.il).

Cahen earned his BSc degree in chemistry and physics from the Hebrew University of Jerusalem (HUJ) and his PhD degree in materials chemistry from Northwestern University. His postdoc studies were on photosynthesis at HUJ and the Weizmann Institute of Science. Other studies focus on understanding electronic transport across hybrid molecular/non-molecular, (bio) organic/inorganic materials, including proteins, and on alternative sustainable energy resources,

especially on solar cells and combinations of these fields (in terms of possible novel science). Cahen heads the Weizmann Institute's Alternative Sustainable Energy Research Initiative.



#### Richard R. Cavanagh

Material Measurement Laboratory,  
National Institute of Standards and  
Technology, Gaithersburg, MD 20899-  
8300, USA; tel. 301-975-8300; and  
email [Richard.Cavanagh@NIST.gov](mailto:Richard.Cavanagh@NIST.gov).

Cavanagh is the acting director of the Material Measurement Laboratory at the National Institute of Standards and Technology. He is responsible for measurement science and standards spanning biology, chemistry, and materials science. He joined NIST in 1979 after obtaining his PhD degree in physical chemistry from Harvard

University. He pursued an active research career in surface science, using state-selected and time-resolved laser diagnostics to examine the surface dynamics of small molecules. He is a Fellow of APS and AVS, has received the Department of Commerce Silver and Gold medals, and currently chairs VAMAS.

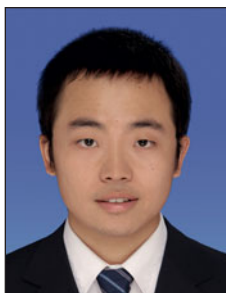


#### K.C. Chen

Materials Engineering Department,  
Cal Poly, SLO; tel. 805-756-6634;  
and email [kcchen@calpoly.edu](mailto:kcchen@calpoly.edu).

Chen has been teaching in the Materials Engineering Department at Cal Poly, SLO, for over a decade. She teaches many different courses in materials engineering, as well as interdisciplinary, project-based classes. Her research interests include engineering education, K-12 outreach, and informal learning. Chen earned her BS degree in materials science and engineering from Michigan State University and her

PhD degree in materials science from the Massachusetts Institute of Technology. She is a member of MRS, the American Society of Engineering Education, ASM, and TMS.



#### Y. Deng

Celestijnenlaan, 3001 Heverlee,  
Belgium; tel. +32 16 322499; and  
email [yelin.deng@cib.kuleuven.be](mailto:yelin.deng@cib.kuleuven.be).

Deng is a doctoral student in the Centre for Industrial Management at KU Leuven. His research interests include bio-based materials, composite materials, and life-cycle engineering. He holds B.Eng and M.Sc degrees in electrical engineering both from Xi'an Jiaotong University, China.



#### W. Dewulf

Leuven Engineering College, KU Leuven  
Association, Belgium; tel. +32 16 301074;  
and email [wim.dewulf@groopt.be](mailto:wim.dewulf@groopt.be).

Dewulf received his master's and PhD degrees in mechanical engineering from KU Leuven in 1996 and 2003, respectively. He currently holds the positions of assistant professor in Group T—International University College Leuven and associate professor at KU Leuven—Mechanical Engineering Department. He serves as head of the research groups' manufacturing and control and sustainable engineering, leading research

in the fields of life-cycle assessment, sustainable transportation and manufacturing, and quality control.



#### Steven Duclos

GE Global Research Center, Niskayuna, NY

Duclos is a chief scientist at the GE Global Research Center in Niskayuna, NY. He manages GE's Material Sustainability Initiative, addressing the sustainability of the company's raw material supply. Duclos has testified to both U.S. Senate and House committees on the impact of materials constraints on U.S. manufacturing capability. He holds 34 U.S. patents and has authored 30 technical papers. He received his BS in physics in 1984 from Washington University in St. Louis, and a PhD

degree in physics from Cornell University in 1990.



#### Joost R. Duflo

Celestijnenlaan, 3001 Heverlee, Belgium;  
tel. +32 16 322845; and email  
[joost.duflo@mech.kuleuven.be](mailto:joost.duflo@mech.kuleuven.be).

Duflo holds master degrees in architectural and electromechanical engineering and a PhD degree in engineering from KU Leuven, Belgium. After a number of years of industrial experience in different international companies, he has been active as a faculty member in the Mechanical Engineering Department of KU Leuven since 1997. He became a tenured professor in 2006. His principal research activities are in the field of

design support methods and methodologies, with special attention to systematic innovation, ecodesign, and life-cycle engineering. He is a member of CIRP and has published over 200 international publications.



#### Roderick G. Eggert

Division of Economics and Business,  
Colorado School of Mines, Golden, CO  
80401-1887, USA; tel. 303-273-3981;  
and email [reggert@mines.edu](mailto:reggert@mines.edu).

Eggert has a BA degree in earth sciences from Dartmouth College, a MS in geochemistry and mineralogy from Penn State University, and a PhD degree in mineral economics also from Penn State. He is a professor and director of the Division of Economics and Business at the Colorado School of Mines, where he has taught since 1986. His research and teaching have

focused on various aspects of mineral economics and public policy, including mineral exploration, metal demand, mining and sustainable development, mineral and metal markets, and critical minerals and materials. He received the 2010 Mineral Economics Award of the American Institute of Mining, Metallurgical, and Petroleum Engineers. He chaired the National Research Council committee and served on the study committee that prepared the 2011 report *Energy Critical Elements: Securing Materials for Emerging Technologies*.



**Matthias Englert**  
Darmstadt University of Technology, Germany;  
email [Englert@ianus.tu-darmstadt.de](mailto:Englert@ianus.tu-darmstadt.de).

Englert is a research fellow at the Interdisciplinary Research Group in Science Technology and Security (IANUS) at Darmstadt University of Technology. He has a PhD degree in physics from Darmstadt University of Technology and spent two years as a postdoc fellow at the Center for International Security and Cooperation (CISAC) at Stanford University. Englert's current research focuses on the nuclear fuel cycle, especially on enrichment technologies and uranium resources.

He is also an expert on nuclear weapons proliferation, fissile materials, civil nuclear energy, and neutron transport simulation.



**Lorenz Erdmann**  
Institute for Future Studies and  
Technology Assessment, Berlin,  
Germany; email [L.erdmann@izt.de](mailto:L.erdmann@izt.de).

Erdmann is a senior researcher at the Institute for Futures Studies and Technology Assessment (IZT) in Berlin, Germany. He graduated with a degree in environmental engineering from the Technical University of Berlin. His major research subjects include resource criticality, technology assessment, foresight, and industrial ecology. He has been instrumental in establishing research on emerging material issues such

as the future impact of RFID tags on waste management and raw material demand for emerging technologies.



**Rod Ewing**  
Department of Geological Sciences,  
University of Michigan; tel. 734-763-9295;  
and email [rodewing@engin.umich.edu](mailto:rodewing@engin.umich.edu).

Ewing is the Edward H. Kraus University Professor in the Department of Geological Sciences at the University of Michigan. He is also a professor in the Departments of Nuclear Engineering and Radiological Sciences and Materials Science and Engineering. During 2010 to 2011, he was a visiting professor at the Center for International Security and Cooperation (CISAC) at Stanford University. Ewing's

research interests focus on radiation effects in minerals, ion beam modification of materials, the crystal-chemistry of actinide minerals and compounds, and the "back-end" of the nuclear fuel cycle. He is the past president of the International Union of Materials Research Societies. Ewing has written extensively on issues related to nuclear waste management. He has received the Dana Medal of the Mineralogical Society of America and the Lomonosov Gold Medal of the Russian Academy of Sciences.



**Michael J. Fasolka**  
Material Measurement Laboratory, National  
Institute of Standards and Technology,  
Gaithersburg, MD 20899-8300, USA; tel.  
301-975-8526; and email [mfasolka@nist.gov](mailto:mfasolka@nist.gov).

Fasolka is senior scientific advisor to the director of the Material Measurement Laboratory at the National Institute of Standards and Technology, where he supports scientific program development, strategic planning, and stakeholder communications. He completed his doctorate in polymer physics at MIT. At NIST since 2000, he has researched advanced scanning

probe microscopy and polymer self-assembly in thin films. He was director of the NIST Combinatorial Methods Center, which developed high-throughput techniques for polymer materials, and which garnered a Department of Commerce Silver Medal for service to industry. He is an author of more than 50 scientific publications and a recipient of a PECASE award in 2005.



**Vasilis Fthenakis**  
Brookhaven National Lab, Upton,  
NY 11973, USA; tel. 631-344-2830;  
and email: [vmf@bnl.gov](mailto:vmf@bnl.gov).

Fthenakis is a tenured senior chemical engineer at Brookhaven National Laboratory and professor of environmental engineering at Columbia University. He is a Fellow of the American Institute of Chemical Engineers and a Fellow of the International Energy Foundation. He earned his BS from the University of Athens, MS from Columbia University, and PhD degree from New York University. Fthenakis directs the National

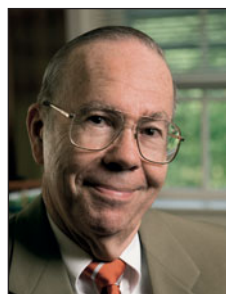
Photovoltaic Environmental Research Center at BNL and also directs the Center for Life Cycle Analysis at Columbia, which he founded in 2006. Fthenakis is the author or co-author of four books and 300 articles and reports on energy and sustainability topics.



**Linda L. Gaines**  
Center for Transportation Research at  
Argonne National Laboratory, Illinois  
60439, USA; email [lgaines@anl.gov](mailto:lgaines@anl.gov).

Gaines is a systems analyst at the Center for Transportation Research at Argonne National Laboratory. She holds a BA in chemistry and physics from Harvard and a PhD degree in physics from Columbia. Her primary interest is problem solving, applied to efficient use of resources. She began her 30+ years at Argonne by writing a series of handbooks of energy and material flows in petroleum refining, organic

chemicals, and copper industries that provided background for studies of technical and institutional issues involved in recycling discarded tires, packaging, and other energy-intensive materials. Her most recent work has involved studying ways to reduce petroleum use and other impacts from transport by recycling of batteries and also by reducing vehicle idling.



**Thomas E. Graedel**  
Yale School of Forestry and  
Environmental Studies, New Haven, CT  
06511, USA; tel. 203-432-9733; and  
email [thomas.graedel@yale.edu](mailto:thomas.graedel@yale.edu).

Graedel joined Yale University in 1997 after 27 years at AT&T Bell Laboratories. One of the founders of the emerging field of industrial ecology, he co-authored the first textbook in that specialty. His characterizations of the cycles of industrially used metals explore aspects of resource availability, potential environmental impacts, opportunities for recycling and reuse,

and resources policy initiatives. He was elected to the U.S. National Academy of Engineering in 2002 and chairs the Committee on Linkages of Sustainability in the Federal Government for the U.S. National Research Council.



**Jeffrey C. Grossman**  
Massachusetts Institute of  
Technology, Cambridge, MA 02139,  
USA; email [jcg@mit.edu](mailto:jcg@mit.edu).

Grossman is an associate professor in the Department of Materials Science and Engineering at the Massachusetts Institute of Technology. He received his PhD degree in theoretical physics from the University of Illinois, performed postdoctoral work at U.C. Berkeley, and was a Lawrence Fellow at the Lawrence Livermore National Laboratory. Grossman's research uses theory and simulation to gain fundamental

understanding of, and then uses such insights to design new materials for, energy conversion and storage with improved properties.



**Robert Heard**  
Department of Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA 15213, USA; tel. 412-268-2705; and email [rheard@andrew.cmu.edu](mailto:rheard@andrew.cmu.edu).

Heard is an associate teaching faculty member in the Materials Science and Engineering Department at Carnegie Mellon University and serves as CEO of PowerMetal Technologies, Carlsbad California, and president of Integran Technologies USA. Past work includes activities as a technology consultant and vice president positions in several international engineering

companies. Heard has served on the Board of Directors of AIST, as president for the CMU Chapter of Sigma Xi for several terms, and as a member of AIST, ASM, TMS, MRS, and ASEE. He has authored multiple technical papers on engineering education, material applications, materials processing, casting, plasma and alternate iron technologies, and authored a book, *Horizontal Continuous Casting*. His current activities and interests include global issues in engineering education specific to materials and the commercialization dynamics of materials.



**Chris Hendrickson**  
Green Design Institute, Carnegie Mellon University, Pittsburgh, PA 15213, USA; tel. 412-268-1066; and email [cjh@cmu.edu](mailto:cjh@cmu.edu).

Hendrickson is the Duquesne Light Company Professor of Engineering and co-director of the Green Design Institute at Carnegie Mellon University. His research, teaching, and consulting are in the general area of engineering planning and management, including design for the environment, project management, transportation systems, finance, and computer applications. Current research projects include

life-cycle assessment methods, assessment of alternative construction materials, economic and environmental implications of Ecommerce, product take back planning, and infrastructure for alternative fuels. He has co-authored three textbooks and two monographs. Hendrickson is a member of the National Academy of Engineering, a Distinguished Member of the American Society of Civil Engineering, an Emeritus Member of the Transportation Research Board, and a Fellow of the American Association for the Advancement of Science.



**Alan J. Hurd**  
Santa Fe Institute and Los Alamos National Laboratory, Los Alamos, NM 87545, USA; tel. 505-946-2723; and email [ajhurd@lanl.gov](mailto:ajhurd@lanl.gov).

On sabbatical in 2011–2012 at the Santa Fe Institute where he is working on energy critical elements, Hurd served from 2001 to 2011 as director of the Lujan Neutron Scattering Center at LANSCE at Los Alamos National Laboratory. He has degrees in physics from the Colorado School of Mines and the University of Colorado. Hurd studied light scattering from colloidal crystals at CU as an NSF Fellow, recognized

with the university's Outstanding Graduate Research Award. His research interests include neutron scattering, fractal materials, biomembranes, complex fluids, and sol-gel ceramics. Hurd was the president of the Materials Research Society in 2007. He received the 1999 MRS Woody Award, the 2004 MRS Special Recognition Award, the DoD Patriot Award in 2008, and a Citation from the CIA in 2004. He recently served as the chair of the MRS Government Affairs Committee and is a member of the American Physical Society's Committee on International Scientific Affairs.



**Hamlin Jennings**  
Massachusetts Institute of Technology, Cambridge, MA 02139, USA; email [hmj@mit.edu](mailto:hmj@mit.edu).

Jennings is the executive director of the Concrete Sustainability Hub at MIT. From 1987 to 2010, he was a professor in civil and environmental engineering (a term as chair) and materials science and engineering at Northwestern University. He received a BSc degree in physics from Tufts University and a PhD degree in materials science from Brown University, after which he spent a decade at the University of Cape Town

and then at Imperial College London, followed by five years at NIST.



**Ronald L. Kelley**  
MRS Washington Office, Washington DC; tel. 202-289-9881; and email [rkelley@livingstongroupdc.com](mailto:rkelley@livingstongroupdc.com).

Kelley specializes in government affairs, lobbying, and strategic alliances for corporations, professional societies, universities, and trade associations. Kelley is president of Strategic Partners, Inc., founded in 1986, and he is also the director of The Livingston Group's Science, Technology, and Telecommunications practice area and has been associated with The Livingston Group since 2000. His consulting

experience includes a wide range of high technology industries focused on research and development programs. Prior to his consulting career, he was an employee for 17 years with Dow Corning Corporation. For 20 years he has represented the Materials Research Society (MRS) in Washington, DC advocacy and interacts with federal agencies regarding their research & development programs. Kelley graduated from the University of Illinois in 1968 with a bachelor of science in chemistry.



**Gregory A. Keoleian**  
University of Michigan, Ann Arbor, MI 48109-1041, USA; tel. 734-764-3194; and email [gregak@umich.edu](mailto:gregak@umich.edu).

Keoleian is the Peter M. Wege Endowed Professor of Sustainable Systems at the University of Michigan with appointments in the School of Natural Resources and Environment and Civil and Environmental Engineering. He also serves as the director of the Center for Sustainable Systems. He earned a PhD degree in chemical engineering at the University of Michigan in 1987. His research focuses on the develop-

ment and application of life-cycle models and sustainability metrics to guide the design and improvement of products and technology. In 2011, he began a two-year term as president of the International Society for Industrial Ecology.



**Doug Konitzer**  
Airfoil Materials, GE Aviation, Cincinnati, OH, USA.

Konitzer is section manager for Airfoil Materials at GE Aviation. He manages efforts in development and application of Ni and Ti alloys to airfoils in aircraft engines. He has authored 35 technical papers and has 10 U.S. patents and applications. Konitzer received his BS degree in 1979, his MS degree in 1981, and PhD degree in 1984 in metallurgical engineering from the University of Illinois.



**Lindsay Krall**  
Swedish Nuclear Fuel and Waste Management Company, Stockholm.

Krall is an intern at Swedish Nuclear Fuel and Waste Management Company (SKB). She has a BSE degree in industrial and operations engineering from the University of Michigan. Krall's current research focuses on energy minerals, particularly those bearing thorium and rare-earth element resources, and on organizational and geological approaches to the management of nuclear materials.



**Anthony Ku**  
GE Global Research, Niskayuna, NY 12309, USA; tel. 518-387-4628; and email [kua@research.ge.com](mailto:kua@research.ge.com).

Ku is a senior engineer in the Manufacturing and Materials Technology Organization at GE Global Research in Niskayuna, NY. He received his PhD degree in chemical engineering from Princeton University and his MS degree in chemical engineering practice from MIT in 2004 and 1997, respectively. Since joining GE, he has worked on several projects related to nano-structured ceramic materials, in support of GE's

energy and water businesses. He currently leads an effort aimed at developing next-generation technologies for gas and liquid separations.



**Min-Ha Lee**  
Korea Institute for Rare Metals, KITECH, Incheon, 406-840, South Korea; tel. +82-32-8500-424; and email [mhlee1@kitech.re.kr](mailto:mhlee1@kitech.re.kr).

Lee has been the principal researcher of the Korea Institute for Rare Metals (KIRAM) at the Korea Institute of Industrial Technology (KITECH) since 2010. He joined KITECH as a senior researcher in 2008. Lee graduated from Yonsei University in 2004 with a PhD degree in metallurgical engineering. His research interests include rapid solidification, mechanical alloying, powder consolidation, and thermo-

plastic deformation. Currently he focuses on rare metals-related issues such as recycling, replacement, reduction, and substitution of critical elements. Lee is a member of TMS and the German Materials Science Association (DGM). He received the 2009 Korea Materials & Components Industry Agency President's Award. Lee serves as a member of the Korean government policy advisory board on International Affairs of Rare Metals and is a member of the Korean Powder Metallurgy Institute's Committee on scientific publication affairs.



**Richard LeSar**  
Department of Materials Science and Engineering, Iowa State University; tel. 515-294-1841; and email [lesar@iastate.edu](mailto:lesar@iastate.edu).

LeSar is the Lynn Gleason Professor and Chair of the Department of Materials Science and Engineering at Iowa State University. His work is centered on the use of modeling and simulation of materials, with a recent focus on dislocation-based plasticity. He has been the co-founder of three courses on sustainability at Iowa State, including one course taught in Africa, and is a co-leader of the creation of a

new sustainability minor.



**Igor Lubomirsky**  
Department of Materials and Interfaces, Weizmann Institute of Science, Rehovot 76100, Israel; tel. 972-8-9342142; and email [igor.lubomirsky@weizmann.ac.il](mailto:igor.lubomirsky@weizmann.ac.il).

Lubomirsky is an associate professor in the Department of Materials and Interfaces at the Weizmann Institute of Science. He earned his BSc degree in chemical engineering from Kharkov Polytechnic Institute (Ukraine) and his PhD degree in solid-state chemistry from the Weizmann Institute of Science. His postdoc work was in electrical engineering at UCLA and the Max

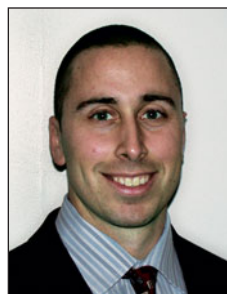
Planck Institute for Solid State Research (Stuttgart, Germany). He studies systems in which elasticity modifies chemical and physical properties of solids. This includes three main topics: quasi-amorphous materials, inelastic effect in oxygen ion conductors, and polycrystalline macro-domains in ferroelectric films. He also works on materials-energy sustainability and energy storage technology based on CO<sub>2</sub> to CO conversion.



**Francis C. McMichael**  
Carnegie Mellon University, Pittsburgh, PA 15213, USA; email [fm2a@andrew.cmu.edu](mailto:fm2a@andrew.cmu.edu).

McMichael is Professor Emeritus at Carnegie Mellon University (CMU) and a member of the faculty of the Department of Civil and Environmental Engineering and the Department of Engineering and Public Policy at CMU. His research and teaching address environmental engineering, planning and management, and engineering cost analysis, including pollution prevention, life-cycle analysis, full cost accounting, design for the environment, and

technology design and assessment for integrated waste management. Recent work has combined engineering process flow modeling with economic input-output analysis.



**Bryan D. Morreale**  
Office of Research & Development, National Energy Technology Laboratory, Pittsburgh, PA 15236, USA; tel. 412-386-5929; and email [bryan.morreale@netl.doe.gov](mailto:bryan.morreale@netl.doe.gov).

Morreale is the acting Materials Science and Engineering Focus Area Lead within the Office of Research and Development at the U.S. DOE's National Energy Technology Laboratory. He currently leads activities across a diverse research portfolio related to both structural and functional materials for advanced energy conversion applications, specifically focused on an

integrated computational and experimental approach to accelerated materials development. Morreale earned his PhD degree from the University of Pittsburgh with a research focus on the development of materials for hydrogen separation. His research focuses on numerous energy conversion and conservation technologies, specifically gasification, gas separations, membrane reactors, synthesis gas conversion, liquefaction, and carbon utilization.



**Oladele Ogunseitan**  
Department of Population Health and Disease Prevention, University of California, Irvine, CA 92697-3597, USA; tel. 949-824-0611; and email [Oladele.Ogunseitan@uci.edu](mailto:Oladele.Ogunseitan@uci.edu).

Ogunseitan is professor and chair of Population Health & Disease Prevention at UC Irvine, where he directs the Green Materials Research and Education initiative. He is general editor of *Green Health*, part of the SAGE series on "Green Society: Toward a Sustainable Future." He was a faculty fellow in the Environment and Natural Resources Program at Harvard. He serves on

the steering committee of the UC Irvine Environment Institute and on the State of California's Green Ribbon Science Panel.



**Roland J.-M. Pellenq**  
Massachusetts Institute of Technology, Cambridge, MA 02139, USA; email [pellenq@mit.edu](mailto:pellenq@mit.edu).

Pellenq is a computational materials scientist with a strong interest in the physics and mechanics of porous materials and confined fluids applied to a large variety of critical problems in energy and environment. He graduated in 1994 with a PhD degree in chemical physics from Imperial College and is a CNRS Research Director at the CINaM Laboratory (Aix-Marseille University). Since 2010, he has been the senior

research scientist at MIT and one of the co-founders of the MIT Concrete Sustainability Hub.



**Dianne L. Poster**  
National Institute of Standards and Technology; tel. 301-975-8941; and e-mail [poster@nist.gov](mailto:poster@nist.gov).

Poster is the special assistant to the NIST deputy director. She holds a PhD degree in chemistry from the University of Maryland and is frequently an invited speaker and panelist on environmental health issues, both nationally and internationally. In a prior assignment, as deputy associate director for technology and environmental policy at the White House Council on Environmental Quality, Poster administered the environmental federal regulatory

portfolio and advised on policy and strategy issues related to protecting the environment.



**Markus A. Reuter**  
Outotec Oyj, Espoo 02201, Finland; email [markus.reuter@outotec.com](mailto:markus.reuter@outotec.com).

Reuter is a director of Technology Management at Outotec Finland. He was a professor at TU Delft (Netherlands), and now is a professorial fellow at the University of Melbourne. He has a D.Eng. degree from Stellenbosch University, a Dr. habil. degree from RWTH Aachen University (Germany), and a PhD degree from the University of Stellenbosch. He also worked for Mintek and Anglo American Corporation in industry. Reuter has over 370 publications and is a

co-author of *Metrics of Material and Metal Ecology*. He is the lead author of a second report on recycling for UNEP and co-editor of the *Handbook of Recycling*.



**Todd Rockstroh**  
GE Aviation, Cincinnati, OH, USA.

Rockstroh is the supply chain consulting engineer for Laser and Advanced Manufacturing Processes at General Electric. His primary programs include intelligent, additive, and sustainable manufacturing technologies, establishing roadmaps for the GE Aviation supply chain. Rockstroh completed his bachelor's (1978) and master's (1980) degrees at Purdue University. He received his PhD (1986) degree in mechanical engineering from the University of Illinois and was previously employed by Bell Labs.



**Julie M. Schoenung**  
Department of Chemical Engineering and Materials Science, University of California, Davis, CA 95616, USA; tel. 530-752-5840; and email [jmschoenung@ucdavis.edu](mailto:jmschoenung@ucdavis.edu).

Schoenung is a professor of chemical engineering and materials science at the University of California, Davis. Her research interests include green engineering and design, materials selection, industrial ecology, processing and characterization of nanostructured materials for structural applications, and mechanistic interpretation of material behavior. Schoenung

serves on the State of California Green Ribbon Science Panel and is a member of the Eco-Design Executive Committee (Japan), the Green Screen Technical Advisory Committee, and UC Berkeley's Green Chemistry Extension Program Advisory Board.



**Andrew Shapiro**  
GE Global Research, Niskayuna, NY 12309, USA; tel. 518-387-4735; and email [Shapiro@ge.com](mailto:Shapiro@ge.com).

Shapiro is a principal engineer in the Thermal Systems Organization at GE Global Research in Niskayuna, NY. He received his PhD degree in mechanical engineering from MIT in the area of physicochemical hydrodynamics in 1990. His thesis was on using electro-osmosis for soil remediation. At GE he has worked on many projects related to energy and environmental technologies and has more than 25 patents.

Currently his research interests include both thermally driven water purification and electrochemical energy conversion systems.



**John L. Sullivan**  
Energy Systems Division, Argonne National Laboratory, Argonne, IL 60439-4815, USA; tel. 630-252-3786; and email [jsullivan@anl.gov](mailto:jsullivan@anl.gov).

Sullivan is an environmental scientist at Argonne National Laboratory. Previously, he spent two years at the University of Michigan Transportation Research Institute, and 30 years at the Scientific Research Laboratory at Ford Motor Company. He received a PhD degree in physical chemistry from the State University of New York College of Environmental Science and Forestry. Sullivan has conducted and led

research projects in advanced materials, experimental structural analysis techniques, recycling of automotive materials, life-cycle assessment, advanced vehicle safety, alternative fuels, and transportation sustainability. He has 20 years of experience in life-cycle assessment.



**Franz-Josef Ulm**  
Massachusetts Institute of Technology, Cambridge, MA 02139, USA; email [ulm@mit.edu](mailto:ulm@mit.edu).

Ulm is the George Macomber Professor of Civil and Environmental Engineering at the Massachusetts Institute of Technology. His research focuses on the nano- and micromechanics of porous materials, such as concrete, rocks, and bones; in the durability mechanics of engineering materials and structures; and in computational mechanics of high-performance composite materials. Ulm was one of the co-

founders of the MIT Concrete Sustainability Hub and is its current director.



**Karel Van Acker**  
Kasteelpark Arenberg 44 bus 2450, BE-3001, Heverku, Belgium; tel. +32 16 321271; and email [karel.vanacker@lrd.kuleuven.be](mailto:karel.vanacker@lrd.kuleuven.be).

Van Acker is a senior lecturer in sustainable materials and processes and coordinator of the Leuven Materials Research Centre at KU Leuven. He chairs the Flemish Transition Network on Sustainable Materials Management and is involved in numerous projects on sustainability assessments of material life cycles, ranging from CFRP to bio-based plastics, and on landfill mining and the valorization of residues.

He earned a M.Sc. degree in materials engineering and obtained a PhD degree in materials science, both from KU Leuven. He worked for several years in industry as manager of a materials and mechanical testing laboratory and at the Flemish Institute for Technological Research. He joined KU Leuven at the end of 2005.



**Antoinette van Schaik**  
Material Recycling and Sustainability, The Netherlands; tel. +31 6 53836042; and email [A.vanSchaik@marasustainability.nl](mailto:A.vanSchaik@marasustainability.nl).

Van Schaik owns and operates Material Recycling and Sustainability (since 2005), a technological consultancy company on recycling and sustainability. She has worked at Delft University of Technology (NL) (PhD in 2004) and for Auto Recycling Nederland (1997). She has worked with automotive OEM's, metallurgical, (waste) water, and recycling industries. She has over 80 publications and is co-author of the

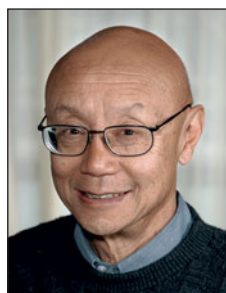
book *Metrics of Material and Metal Ecology*.



**Krystyn J. Van Vliet**  
Massachusetts Institute of Technology, Cambridge, MA 02139, USA; email [krystyn@mit.edu](mailto:krystyn@mit.edu).

Van Vliet is an associate professor of materials science and engineering and biological engineering at the Massachusetts Institute of Technology. She earned her ScB degree at Brown University, her PhD degree at MIT, and completed postdoctoral research at Children's Hospital Boston. Her group studies coupling between chemistry and mechanics at complex material interfaces—ranging from cell-matrix

interfaces to those in engineered nanocomposites—through both molecular-scale experiments and computational simulations. She is a co-founder of the MIT Concrete Sustainability Hub.



**Sidney Yip**  
Massachusetts Institute of Technology, Cambridge, MA 02139, USA; email [syip@mit.edu](mailto:syip@mit.edu).

Yip is professor emeritus (since 2009) at the Massachusetts Institute of Technology, where he was a member of the Department of Nuclear Science Engineering (1995–2009) and the Department of Materials Science and Engineering (2002–2009). He is interested in modeling materials phenomena with characteristic multistage kinetics—thermal and irradiation creep, corrosion in extreme environments, and

hardening of cement paste—through molecular simulations that can reach time scales from seconds to years.



2012 New Diamond and Nano Carbons Conference

May 20-24, 2012 Conrad San Juan Condado Plaza – San Juan, Puerto Rico

**REGISTER BY MAY 3, 2012 AND SAVE!**

### SAVE THE DATE

Join us for the fourth international New Diamond and Nano Carbons Conference (NDNC 2012). Hosted in beautiful San Juan, Puerto Rico, the conference will present high-impact scientific and technological advances, along with critical developments to enable the application of diamond, carbon nanostructures and related materials in a diverse range of products. This year's conference will feature plenary sessions, parallel topical sessions, poster sessions and an industrial exhibition. Mark your calendars today and plan to attend NDNC 2012!

### SCIENTIFIC PROGRAM

The five-day conference will feature oral and poster presentations covering:

- Science and Technology of Diamond
- Synthesis and Characterization of Graphenes
- Synthesis and Characterization of Nano Carbons
- C-based Coatings and Tribological Applications
- Interfaces and Heterojunctions of C-based Materials with Other Materials
- Electronic, Optical and Acoustic Applications of C-based Materials
- Electrochemical Applications of C-based Materials
- Sensor Applications of C-based Materials
- Biological Applications of C-based Materials
- Spintronics of C-based Materials
- Business Opportunities and Commercialization

[www.mrs.org/ndnc-2012](http://www.mrs.org/ndnc-2012)



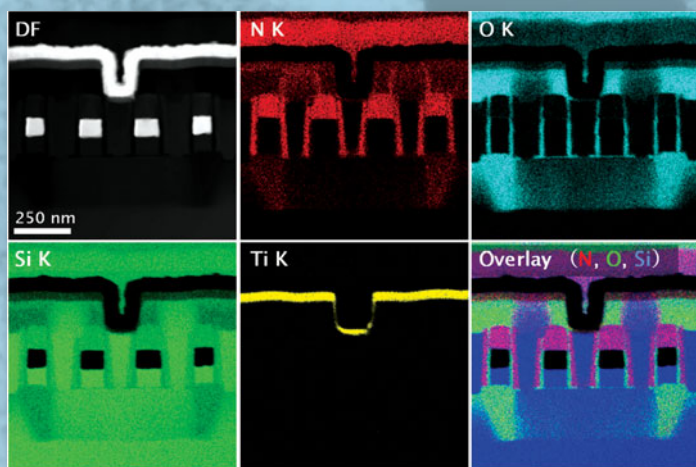
# Unrivaled EDS for TEM

## 0.98sr 100mm<sup>2</sup>

- Exponentially enhances elemental mapping for nano-area analysis TEM
- Automatic retractable design

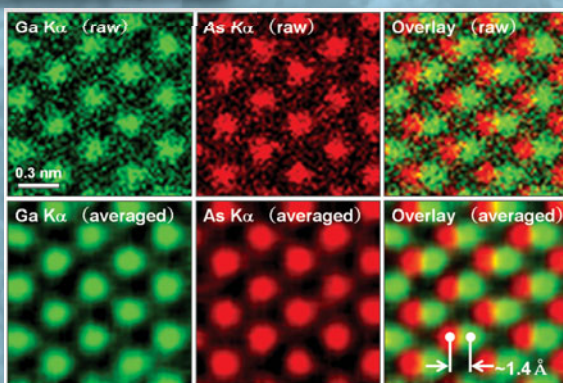


**CENTURIO**  
Large Solid Angle SDD for TEM



*High sensitivity  
for fast mapping  
at atomic resolution*

*Seamless chemical mapping and data collection for S/TEM-TEM-SEM-EDS. (256 x 256 pixels. Total acquisition time: 1 min. 13 sec.)*



*View our real-time  
DRAM analysis video  
at [www.jeolusa.com/UnrivaledEDS](http://www.jeolusa.com/UnrivaledEDS)*

JEM-2800



JEM-ARM200F



# JEOL

Global Solutions Provider for Advanced Technology  
[www.jeolusa.com](http://www.jeolusa.com) • [salesinfo@jeol.com](mailto:salesinfo@jeol.com)  
978-535-5900

Find us on Facebook and Twitter @jeolusa

Another  
**Extreme Imaging**  
Solution

# NANOANALYSIS S/TEM