

Accolades and accomplishments: The ACerS 2011 awards

Although the initial goals of the founders of The American Ceramic Society were to document and share technical information related to the emerging ceramic and glass fields, the founders were also wise enough to know that any group that dared call itself a “Society” also had to have ways of furthering the social relationships and recognizing the truly extraordinary accomplishments of its members.

Thus, a tradition of recognizing and elevating the status of ACerS distinguished members became ingrained in the organization beginning with its first meeting in 1898 when the Society inducted its first “Honorary Member.”

Over the next 113 years, as relationships grew and traditions took root, ACerS elaborated, refined and expanded its honors and awards. Some of the awards that arose over the next eleven decades largely paralleled and ultimately reflected the diversity of the organization and its ten divisions, such as the Basic Science Division’s Robert B. Sosman Award (see page 43). Others arose in response to the changing international character of ceramic and glass science, such as the Richard M. Fultrath Awards (see page 44).

A system of recognizing the greatest service, accomplishments and contributions of Society members also evolved. The annual tradition of naming and inducting Distinguished Life Members and Fellows was crafted not only to bring high honor to the preeminent members of ACerS, but also to serve two other purposes: to maintain a cadre of “spiritual guardians” (in the words of Edward Orton) of the Society, and also to create a career benchmark for young scientists, engineers and business leaders to aspire to.

The ACerS Distinguished Life Member is the highest of the Society’s awards, presented to its most inspirational members who paved new roads in their technical or business fields while contributing to the growth and programming of the organization, and guiding its younger leaders. Only two

or three members each year reach the lofty expectations set for Distinguished Life Members and in 2011, ACerS will be inducting just two: David B. Marshall and Koichi Niihara.

Elevation to Fellow is truly a peer recognition—each nomination is signed by at least seven ACerS members, and the new class is selected by the Society’s Panel of Fellows. Fellows are selected for their outstanding contributions to the ceramic arts or sciences, either through broad and productive scholarship in ceramic science and technology, by conspicuous achievement in ceramic industry or by outstanding service to the Society. The 2011 Class of Fellows is comprised of 20 international members (see page 18).

Society president Marina Pascucci, who will preside over the ACerS Annual Awards banquet, said she is delighted to be presenting Distinguished Life Members, Fellows and other awards and says it’s her hope “that these accolades will continue to be a motivation for ceramic and glass technological advances, and an incentive to scientists and engineers to maintain the high standard of accomplishment set by those that we will honor this year.”

Awards Banquet

The winners of the Society’s 2011 awards, including the new Distinguished Life Members and the new Class of Fellows, will be honored at the **ACerS Annual Awards and Honors Banquet, Monday, Oct. 17, 2011, 7:30 p.m. – 9:30 p.m., in Columbus, Ohio.** The banquet is held in conjunction with the Society’s Annual Meeting and MS&T’11. Purchase tickets when you register for the conference.

Distinguished Life Member Awards



Marshall

David B. Marshall is a principal scientist at Teledyne Scientific Company in Thousand Oaks, Calif. and an adjunct professor in the Materials Department at

the University of California, Santa Barbara. He earned his BSc and PhD in physics from Monash University, Melbourne, Australia in 1971 and 1975 respectively.

Marshall was introduced to the world of structural ceramics and fracture during two post doctoral positions, first with Brian Lawn (now at NIST) at the University of New South Wales in Sydney, Australia, then with Tony Evans at University of California, Berkeley. He joined the Rockwell Science Center (now Teledyne Scientific Co.) in 1983, where he has enjoyed many years of collaboration with many colleagues, most notably

Fred Lange and Brian Cox. Lange wrote of Marshall, "David's major contribution has been the promotion of our Society to the world through his innovative and fundamental contributions to reveal our understanding of ceramic science and engineering."

Marshall's research interests have focused on strengthening, toughening, and reliability of ceramics and ceramic composites. In recent years, he has worked with the Air Force, NASA and industry to develop textile based composites for turbine, scramjet and rocket combustion components and thermal protection systems for spacecraft.

He leads the National Hypersonic Science Center for Materials and Structures, a multi-university partnership funded by AFOSR and NASA. The center is charged with developing key materials that can withstand the harsh environmental, thermal and mechanical demands of hypersonic flight. Other interests include ultra hard tooling materials for friction stir welding of steels.

Marshall finds the community aspects of his career to be deeply satis-

fying. "I found a community to interact with through The American Ceramic Society, of wonderfully talented, stimulating and generous people both within the USA and internationally," he said. Likewise, in his present position, for example, he sees his role as building a research community between university, industry and government partners.

Dedicated to excellent scholarship, Marshall has authored or coauthored more than 200 research papers, two of which are among the ten most cited papers published in the history of the *Journal of the American Ceramic Society*. He was a coauthor of one of the 11 papers used to commemorate the Society's 110 year anniversary. He is an associate editor of the *Journal of the American Ceramic Society* with 14 years of service to date and was its editor for a total of six years. Previous Society awards include the Ross Coffin Purdy Award in 1989, Fulrath Award in 1991, Jeppson Award in 1996, and Sosman Award in 1999. He is a Fellow of the American Ceramic Society (Basic Science Division) and a member of the National Academy of Engineering.



Niihara

Koichi Niihara has been president of Nagaoka University of Technology in Nagaoka, Japan, since September 2009. Prior to this, he served for five years as a professor and a senator of

NUT. From 1989 to 2005 he was a professor at the Institute of Scientific and Industrial Research at Osaka University, Japan, and was awarded the title of emeritus professor in 2005.

Niihara earned his BE, ME and Dr of Eng degrees in nuclear science and engineering from Osaka University. From 1968 to 1989 he worked as an associate professor of MRI, Tohoku University, Japan, was a visiting professor at Virginia Tech and a professor in

the Physics Department of the National Defense Academy, Japan.

He has conducted important and innovative research in many ceramic materials fields, including the fabrication of massive CVD-Si₃N₄, SiC and B₄C.

Mrityunjay Singh, chief scientist at the Ohio Aerospace Institute, recalls Niihara's early studies in the evaluation of fracture toughness of ceramics using the indentation fracture method. "The footprint he left behind, known as the 'Niihara's Equation,' gained common recognition among ceramic researchers worldwide," he says.

Niihara also gained an admirable reputation for pioneering the "nanocomposite concept," which he proposed in 1986. Singh says that prior to Niihara's advocacy of this concept of a new material design, "it was thought that incorporation of a particle of another phase into matrix grains would result in degradation of mechanical/

physical properties. Nowadays, it is obvious that he was right."

More recently, Niihara has been a pioneer and proponent for multifunctional materials, including ones for use in sensory-type applications.

The Army Research Lab's James McCauley described Niihara as "one of the most creative, productive and visionary ceramists in the world."

He has published more than 1000 papers in scientific journals and holds more than 140 patents.

Niihara has received more than 30 awards, including the Richard M. Fulrath Award (1983), the ECD Bridge Building Award (2005) and the John Jeppson Award (2010), and he is a Fellow of The American Ceramic Society. He has organized more than 30 international meetings, including the successful 3rd International Congress on Ceramics (held in 2010 in Japan), where he is a past president.

The 2011 ACerS Class of Fellows



Alford

Neil M. Alford is head of the Department of Materials and deputy principal (research) in the Faculty of Engineering at Imperial College London. His recent

work on microwave dielectric materials has resulted in the development of ultra-low-loss alumina resonators and an understanding of the defect chemistry of TiO_2 , which has allowed the production of very-high-Q and high-dielectric-constant materials. Alford is a Fellow of the Royal Academy of Engineering; Institute of Materials, Minerals and Mining; Institute of Physics; and the Institution of Engineering and Technology. He is a member of the ACerS Electronics Division and is an associate editor of *JACerS*.



Bandyopadhyay

Amit Bandyopadhyay is professor in the School of Mechanical and Materials Engineering at Washington State University in Pullman, Wash. His research program focuses on

materials processing, solid freeform fabrication, biomaterials and piezoelectric materials. Bandyopadhyay received the National Science Foundation CAREER award and the Young Investigator Program Award from the Office of Naval Research. He is associated with the Central Glass and Ceramic Research Institute in India through his appointment as scientist of Indian origin.

He is affiliated with the ACerS Basic Science Division, and is an associate editor of *JACerS*.

Joseph J. Biernacki, PE, is professor of chemical engineering at Tennessee Technological University in Cookeville, Tenn. His current research interests include the application of phase-



Biernacki

resolved multiscale techniques, such as X-ray and neutron diffraction, to study the development of chemical and physical changes in hydrating portland cement. TTU named him its 2003 Outstanding Faculty in Professional Service, citing his dedication to ACerS service in the nomination. He is trustee of the ACerS Cements Division and has twice organized the division's annual program.



Binner

Jon Binner is professor of ceramic materials and dean of the School of Aeronautical, Automotive, Chemical and Materials Engineering at Loughborough

University in the United Kingdom. Binner researches multidisciplinary approaches to improving processing routes for new or improved ceramic materials. Recent work has focused on producing nanostructured ceramics using a "top-down" approach. He is a Fellow and vice president of the Institute of Materials, Mining and Minerals; a Fellow of the Institute of Nanotechnology; and a council member of the European Ceramic Society. He is affiliated with the Basic Science Division of ACerS.

Aldo R. Boccaccini is professor and head of the Institute of Biomaterials, Department of Materials Science and Engineering, University of Erlangen-Nuremberg, Germany, and visiting pro-



Boccaccini

fessor of materials science at Imperial College London, United Kingdom. His research is in the area of glasses, ceramics and composites for biomedical, functional and structural applica-

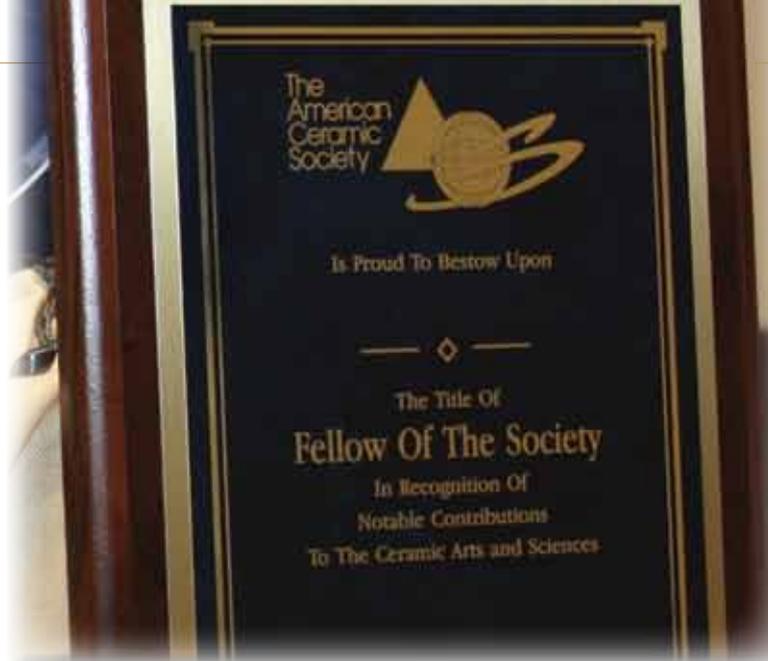
tions. Recent research has focused on the development of scaffold materials for tissue engineering and electrophoretic deposition techniques for nanomaterials. He is editor-in-chief of *Materials Letters* and founded the International Conference Series on Electrophoretic Deposition. Boccaccini is a member of the Basic Science Division and NICE.



German

Randall M. German is associate dean of engineering at San Diego State University. German's research and teaching deal with the net-shape fabrication of engineering materials

via sintering techniques. In recent years his research has focused on microstructure control during sintering. Prior to his 30 years in academics, German was at Mott Corp., JM Ney Corp. and Sandia National Laboratories. German has authored more than 940 articles, 24 patents and 15 books. His book *Sintering Theory and Practice* is the most cited reference in sintering. He is affiliated with the Basic Science Division.





Goto

Takashi Goto is a professor at the Institute for Materials Research, Tohoku University, Sendai, Japan. He was the first to prepare Ti_3SiC_2 by CVD and ferroelectric $BaTi_2O_5$ by the floating zone method. Current research interests are laser- and plasma-enhanced CVD of ceramic films at high speeds and CVD coatings on ceramic powders for spark plasma sintering. He is chair of the Basic Science Division of the Ceramic Society of Japan. He is a member of the Engineering Ceramics Division and a previous recipient of the Richard M. Fulrath Award.



Ikuhara

Yuichi Ikuhara is professor and director of the Nanotechnology Center, Institute of Engineering Innovation at the University of Tokyo. Current research interests are interface and grain-boundary phenomena, transmission electron microscopy, high-temperature ceramics, dislocations, bicrystal experiments and theoretical calculations. He is a previous recipient of the ACerS Fulrath Award. He is on the editorial board of *Materials Science and Engineering: A* and *Materials Transaction*. He is a member of the board of directors at the Microscopy Society of Japan. He is a member of Basic Science Division.



Kohyama

Akira Kohyama is professor in the Graduate School of Materials Engineering, Muroran (National) Institute of Technology and director general of the Organization of Advanced Sustainability Initiative for Energy System/Materials. He is professor emeritus of Kyoto University and director general of the Institute of

Advanced Energy, Kyoto University. Kohyama's work encompasses a wide range of nuclear fission and fusion materials problems from fundamental radiation damage study to low activation material process R&D, reactor component design and fabrication systems integration. He has researched silicon carbide-based fiber and composite materials for more than 30 years. His is active in the Fusion Energy Committee, Japan Academy of Science, and the Atomic Energy Society of Japan. He is a member of the Nuclear and Environmental Technology Division.



Kurtis

Kimberly E. Kurtis is professor in the School of Civil and Environmental Engineering at Georgia Institute of Technology. Kurtis' research on multiscale structure and performance of cement-based materials has resulted in more than 100 technical publications and two US patents. She was 2008–2009 chair of ACerS Cements Division. Kurtis has served as associate editor of the *ASCE Journal of Materials in Civil Engineering* and is an editorial board member for *Cement and Concrete Composites*.



Kwon

Oh-Hun Kwon is director of ceramic technology at the Northboro R&D Center of Saint-Gobain in Northboro, Mass. His current research area is materials for energy solutions, functionalization of polymer composites and construction products with ceramics and coatings. He is interested in developing innovative processes for multiscale composite materials and components. He was a key contributor to the development of a family of electrostatic-discharge dissipative ceramics, which won Saint-Gobain the ACerS 2005 Corporate Technical Achievement Award. He is a member

of the ACerS Corporate Technical Achievement Award Committee and the Basic Science Division.



Liu

Meilin Liu is regents' professor of materials science and engineering and codirector of the Center for Innovative Fuel Cell and Battery Technologies at the Georgia Institute of Technology. Current research activities include modeling, simulation and in situ characterization of charge and mass transport in ionic and electronic conductors; fabrication and evaluation of ceramic membranes, thin films and coatings; and design, fabrication and testing of mesoporous and nanostructured electrodes and devices for energy storage and conversion. He is affiliated with the Electronics Division of ACerS, is a previous recipient of the Ross Coffin Purdy Award and is a winner of an NSF National Young Investigator Award.



Ogawa

Toshio Ogawa is professor of electronic materials science and engineering in the Department of Electrical and Electronic Engineering and head of the Graduate School, Shizuoka Institute of Science and Technology, Japan. Ogawa's research focuses on functional materials, such as ferroelectric ceramics, thin films and single crystals, and their applications. His current interests are dielectric and piezoelectric properties in ceramics and single crystals with respect to ferroelectric domain structures. He has authored more than 100 journal articles and 170 patents and is an editorial board member of *Ceramics International*. He belongs to the Electronics Division of ACerS. Previously he was recognized with the ACerS Fulrath Pacific Award.

Eugene A. Olevsky is distinguished professor of mechanical engineering and

2011 Fellows



Olevsky

the director of the Powder Technology Laboratory at the San Diego State University. Olevsky's primary interests are computational modeling and experimentation on powder processing, including novel ceramic, metallic and composite material synthesis. The SDSU Powder Technology Laboratory that he directs researches spark plasma sintering and multiscale analysis of various powder-processing techniques. He is the author of the internationally recognized continuum theory of sintering. Olevsky is a member of the ACerS Basic Science Division, cochair of the series of International Sintering Conferences and coorganizer of the MS&T symposium on Controlled Synthesis Processing and Applications of Structural and Functional Nanomaterials.



Pan

Xiaoqing Pan is professor of materials science and engineering at the University of Michigan, and director of its Electron Microbeam Analysis Laboratory. He also is chief scientist of the CAS International Innovative Team on Multifunctional Oxide Materials and Applications. Pan's research focuses on understanding the atomic-scale structure-property relationships of advanced materials, including transition metal compounds, nanostructured ferroelectrics and multiferroics, oxide semiconductors, novel superconductors and intelligent automotive catalysts. He received the NSF CAREER Award and was named a National Distinguished Professor, the most prestigious visiting professorship in China. Pan is a member of Basic Science and Electronics Divisions.

Susan B. Sinnott is professor of materials science and engineering at the University of Florida in Gainesville. Current interests include developing new methodologies for the atomistic



Sinnott

simulation of materials, using atomic-scale simulations to examine the origin of friction and wear at interfaces and combining electronic structure and thermodynamic calculations to predict defect formation in metal oxides.

Sinnott belongs to the ACerS Basic Science Division, is a member of the ACerS Nominations Committee and is past chair of the ACerS Member Services Committee.



Spearing

Dane R. Spearing is deputy group leader of the Nuclear Materials Science Group at Los Alamos National Laboratory. His research has focused on long-term storage of plutonium compounds in ceramic and nonceramic packages, resulting in a revised DOE storage standard. Spearing is a member of the Nuclear and Environmental Technology Division and was division chair in 2005–2006. He has edited five *Ceramic Transactions* volumes. He served on the Society's Legislative and Public Affairs Committee, the Member Services Committee, and the Internet Task Force.



Stemmer

Susanne Stemmer is professor of materials at the University of California, Santa Barbara. Her research interests are in transmission electron microscopy techniques, in particular, the development of scanning transmission electron microscopy as a quantitative tool in materials science; novel gate dielectrics; oxide thin-film growth; and the correlation between structure and the electronic and transport properties of oxide heterostructures. In 2000, she received an NSF CAREER Award. Stemmer is a member of the Basic Science Division and has organized several conference symposia for

ACerS. She was the program cochair of the Basic Science Division in 2006–2007, and she and her coauthors received the Edward C. Henry Best Paper Award from the Society in 2006.



Talmy

Inna Talmy recently retired from the Naval Surface Warfare Center where she was distinguished ceramic scientist. Her research efforts were in dielectric ceramics, superconductors, non-oxide structural ceramics and ceramic-matrix composites, and she directed the development of celsian and phosphate ceramics for next-generation tactical missile radomes. Talmy led the Advanced Ceramics Group at NSWC, which researched and developed ceramics for radomes and high-temperature materials for hypersonic and strategic missile applications. Talmy is active in the Engineering Ceramics Division. Her work generated more than 100 publications and 20 patents.



Wereszczak

Andrew A. Wereszczak is distinguished staff scientist at Oak Ridge National Laboratory. His career has involved experimental characterization and modeling of the relationship between the mechanical response of brittle materials and their microstructure, and the design of structural components. His research has applications for advanced gas turbine and internal combustion engines, glass manufacturing, opaque and transparent armor, hybrid bearings, gun barrel liners, electronic devices and energy. Wereszczak is a member and past chair of the Engineering Ceramics Division, was technical program chair of the 2008 International Conference on Ceramics and Advanced Composites, and presently serves on ACerS Member Services Committee. He is a past recipient of the Richard M. Fulrath Award.