Long-Qing Chen receives 2014 Materials Theory Award

The Materials Research Society (MRS) has named Long-Qing Chen of The Pennsylvania State University (Penn State) as the recipient for the 2014 Materials Theory Award for "his pioneering work in the development of the phase-field method and its applications in the computational modeling of mesoscale structures and their dynamics in inhomogeneous materials." Chen will be recognized at the 2014 MRS Fall Meeting in Boston. The Materials Theory Award, endowed by Toh-Ming Lu and Gwo-Ching Wang, "recognizes exceptional advances made by materials theory to the understanding of the structure and behavior of materials."

With a multidisciplinary background in such fields as the phase transformation in metal and ceramic materials; the thermodynamics, kinetics, micromechanics, electro- and magnetostatics of materials; and applied mathematics as well as an extended experience in computational modeling, Chen is able to address novel effects appearing in interdisciplinary areas where the most exciting advancements are expected.

Chen is a pioneer in the area of computational modeling of the evolution of structurally inhomogeneous materials, where his group at Penn State developed corresponding phase-field models for the past 20 years. His work enabled the prediction of materials microstructures during processing, synthesis, or in service.

His group has led the development and applications of phase-field models for domain evolution in nanoscale ferroelectrics and multiferroics, grain growth in polycrystalline systems, and precipitate microstructure evolution in elastically inhomogeneous systems, domain evolution in multiferroic composites and magneto-electric devices, simultaneous evolution of phase and defect microstructures, and advanced numerical algorithms for phase-field models based on the Fourier-spectral method.

Chen received his BS degree in Materials Science and Engineering from Zhejiang University, China, in 1982. He continued his studies in Materials Science and Engineering, receiving a MS degree from the State University of New York at Stony Brook (1985) and his PhD degree from the Massachusetts Institute of Technology (1990). After postdoctoral studies at Rutgers University, Chen joined the Department of Materials Science and Engineering at Penn State, where he has established a distinguished career: He was appointed Assistant Professor in 1992; Associate Professor in 1998; and Professor of Materials Science and Engineering in 2002. In 2013, he was appointed Distinguished Professor in Materials Science and Engineering. He has published more than 400 articles. Chen is a Fellow of the American Physical Society, the American Society for Metals, and MRS. He has received numerous awards for his accomplishments, including the 2003 Penn State Faculty Scholar Medal in Engineering; the prestigious Guggenheim Fellowship in 2005; the ASM Materials Science Research Silver Medal in 2006; and The Minerals, Metals & Materials Society Electronic, Magnetic, & Photonic Materials Division Distinguished Scientist/Engineer Award in 2011.

Mercouri G. Kanatzidis selected as MRS Medalist for nanostructured thermoelectric materials

Mercouri G. Kanatzidis, the Charles E. and Emma H. Morrison Professor in the Department of Chemistry at Northwestern University, has been named to receive the 2014 Materials Research Society (MRS) Medal. He was cited for "the discovery and development of nanostructured thermoelectric materials." Kanatzidis will be recognized at the 2014 MRS Fall Meeting in Boston.

In permanently changing the field of thermoelectric materials research by shifting the paradigm from a bulk homogeneous materials problem to a nanoscience problem that requires nanoscale engineering, Kanatzidis opened paths for future advances that led to performance breakthroughs. By doubling the figure of merit (*ZT*), Kanatzidis's thermoelectric materials enable devices to operate at 14% efficiency, up from 7% before these breakthroughs. Industrial development of these materials is now under way. These nanostructuring phenomena , as demonstrated by Kanatzidis and his group, have been validated by theoretical studies and have led to a