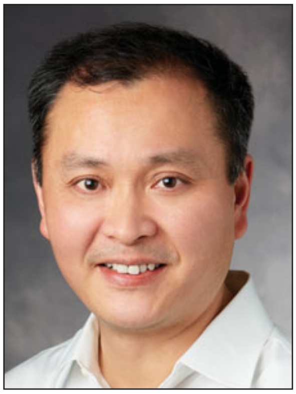
Each recipient has made seminal contributions to the imaging of liquids in the transmission electron microscope (TEM). Together, they have revolutionized experimental techniques for the observation of liquid-based samples and processes for the understanding of material fabrication, electrochemical cell functionality, and biological cells in their native environment.

The work of Ross, Wang, and de Jonge has allowed both open and closed cell liquid microscopy to be realized. Their practical implementations of techniques for imaging liquids in the TEM has created a new area of opportunity for others. The ability to achieve high spatial and temporal resolution when studying processes in liquids has provided unique insight into electrochemical deposition, corrosion, battery operation, and solution-phase particle synthesis, while imaging biological materials in their native environment has provided new information on whole cell structure, viruses, and macromolecular assemblies.

De Jonge is a senior group leader in innovative electron microscopy at the INM–Leibniz Institute for New Materials, Saarbrücken, Germany. He is also Honorary Professor of Experimental Physics at Saarland University, Saarbrücken, Germany. He received his PhD degree in natural sciences (with a specialization in biophysics) from the Faculty of Biology, University of Freiburg, Germany. He also earned a master's degree in experimental physics from the University of Amsterdam, The Netherlands. His research focuses on the development and application of electron microscopy of specimens in liquid, with an emphasis on biophysics and biomedical sciences. He was awarded the Innovation Award of Oak Ridge National Laboratory in 2007, and the Esprit de Corps community service category award at Oak Ridge National Laboratory in 2008. He has published 60 peer-reviewed journal articles, 18 book chapters, and presented 73 invited lectures.

Ross received her BA degree in physics and a PhD degree in materials science from the University of Cambridge, UK. Her postdoc was at AT&T Bell Laboratories, using *in situ* electron microscopy to study the oxidation of Si and dislocations in SiGe. She later joined IBM, building a program around a TEM equipped with *in situ* chemical vapor deposition, evaporation, and focused ion-beam capabilities and a UHV mass-filtered FIB/STM system. She has been a visiting scientist at Lund University and an adjunct professor at Arizona State University. She received the UK Institute of Physics Charles Vernon Boys Medal, the MRS Outstanding Young Investigator Award, and the MSA Burton Medal and holds an honorary doctorate from Lund University. She is a Fellow of APS, AAAS, MRS, MSA, and AVS. She is a co-author of more than 130 journal articles and 7 patents, and has given more than 100 invited and plenary conference talks.

Wang is a staff scientist in the Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory. He received his BSc and MSc degrees in physics from Lanzhou University in China and his PhD degree in materials science and engineering from the University of Leeds, UK. He was the recipient of the Microscopy Today Innovation Award (2012), the R&D 100 Award (2012), the Rowland Snow Award from The American Ceramic Society (1999), the PNNL Exceptional Contribution Award (2003, 2007), the PNNL Pathway to Excellence Award (2013), and the Outstanding Invention Award from the Japanese Science and Education Committee (2001). His research interests focus on the application of state-of-the-art S/TEM and spectroscopy techniques to materials characterization at high spatial resolution, especially *in situ* TEM techniques for energy materials. He has published 280 journal articles, authored 7 book chapters, and has given more than 50 invited and plenary conference talks.



Dai to receive Mid-Career Researcher Award for contributions to carbon-based nanoscience

The Materials Research Society (MRS) has named Hongjie Dai, professor of chemistry at Stanford University, to receive the Mid-Career Researcher Award "for seminal contributions to carbon-based nanoscience and applications in nanoelectronics, renewable energy, and biological systems." Dai will be recognized during the Award Ceremony at the 2016 MRS Spring Meeting in Phoenix, Ariz. The Mid-Career Research Award, endowed by Aldrich Materials Science, recognizes exceptional achievements in materials research made by mid-career researchers.

Dai pioneered the controlled growth of carbon nanotubes using metal-catalyzed chemical vapor deposition. This work showed for the first time that high-quality single-walled nanotubes could be synthesized using a method that enables control over the growth process. In addition, he used his knowledge of nanotube growth to demonstrate hierarchical organization over multiple length scales.

https://doi.org/10.1557/mrs.2016.43 Published online by Cambridge University Press

Dai also exploited this unique control over nanotube growth to uncover basic electronic properties of metallic and semiconducting nanotubes.

Over the past several years, Dai and his group have defined the fundamental limits of nanotube transistors and, in doing so, have raised the level of awareness of nanomaterials to some of the largest semiconductor companies. He also pioneered the use of nanotubes as intracellular molecular transporters for biological molecules and cancer drugs, demonstrating that key spectroscopic properties unique to nanotubes and other carbon nanostructures make them ideal for biological detection, imaging, drug delivery, and cancer therapy via *in vivo* photothermal tumor destruction.

His use of single-walled carbon nanotubes as fluorophores to image mouse hind limb vasculatures in the second near-infrared region (NIR-II) is a feat unattainable by traditional NIR imaging or micro-CT. With the NIR-II's capacity of video-rate imaging with dynamic contrast and ability to quantitate blood flow in both normal and ischemic vessels, Dai has demonstrated the potential of NIR-II imaging for a wide range of biological structures and real-time processes, such as blood flow, vessel clotting, and angiogenesis.

Dai is the J.G. Jackson and C.J. Wood Professor of Chemistry at Stanford University. He earned his PhD degree in applied physics/physical chemistry from Harvard University in 1994. He is the Honorary Chair Professor of the National Taiwan University of Science and Technology (2015), a Fellow of the American Association for the Advancement of Sciences and the American Academy of Arts and Sciences, and serves on the editorial boards of eight publications. Dai has written more than 250 papers, and he is ranked as one of the most cited chemists (in materials chemistry) by Thomson Reuters.

Di Carlo named 2016 MRS Outstanding Young Investigator for microstructured materials

Dino Di Carlo, professor of bioengineering at the University of California–Los Angeles, has been named a 2016 Materials Research Society (MRS) Outstanding Young Investigator. He was cited "for pioneering methods to manufacture, measure, and manipulate microstructured materials and applying these innovations to biomedical problems." He will be presented with the award at the 2016 MRS Spring Meeting in Phoenix, Ariz.

Di Carlo has pioneered the use of inertia in microfluidic systems for controlling cell and particle motion. He has shown that inertia is not only critical to low Reynolds number flows in microchannels, but it is also extremely useful and easily exploited in these systems to achieve control over manipulation of bioparticles and cells, including positioning randomly distributed cells into a single-file stream, spreading cells out in ordered trains, or separating cells by size or deformability.

More recently, Di Carlo's research has used microfluidics and microfabrication techniques, especially inertial microfluidic techniques, to engineer novel materials to address various applications such as in wound healing, 3D advanced materials, tunable biomaterials, and shaped microfibers. Microfluidically fabricated microgel building blocks are the basis of a new microporous annealed particle scaffold technology that accelerates wound healing without growth factors in a cost-effective manner.

Di Carlo also led work to develop materials with strong embedded and patterned micromagnets for biomedical applications. Such micromagnetic arrays were used to manipulate magnetic nanoparticles within cells and apply forces to cells over large arrays. He discovered that force can bias the axis of cell division within cells using this platform, with implications for the early development of tissues as they morph and stretch. These arrayed micromagnets were also embedded into flexible materials to enable manipulation and magnetic actuation or cell separation on surfaces such as skin or centrifuge tubes.

Di Carlo received his BS degree in bioengineering from the University of California–Berkeley and received a PhD degree in bioengineering from the University of California–Berkeley and San Francisco. He then conducted postdoctoral studies from 2006 to 2008 at the Center for Engineering in Medicine at Harvard Medical School and Massachusetts General Hospital. He was awarded the National Science Foundation Faculty Early Career Development Award and the US Office of Naval Research Young Investigator Award in 2012, the Packard Fellowship for Science and Engineering and Defense Advanced Research Projects Agency Young Faculty Award in 2011, and received the National Institutes of Health Director's New Innovator Award and Coulter Translational Research Award in 2010.

https://doi.org/10.1557/mrs.2016.43 Published online by Cambridge University Press