Eni Italgas Prize for Energy and Environment; the Ernest Orlando Lawrence Award; and the Kavli Distinguished Lectureship in Nanoscience, MRS. He is a fellow of both the American Physical Society and the American Association for the Advancement of Science. In 2004, he was elected into the National Academy of Sciences and the American Academy of Arts and Sciences.

The MRS Von Hippel Award includes a $10,000 cash prize, honorary membership in MRS, and a unique trophy—a mounted ruby laser crystal, symbolizing the many faceted nature of materials research. The award recognizes those qualities most prized by materials scientists and engineers—brilliance and originality of intellect, combined with vision that transcends the boundaries of conventional disciplines, as exemplified by the life of Arthur von Hippel (http://vonhippel.mrs.org).

# Phaedon Avouris selected for 2011 David Turnbull Lectureship

The Materials Research Society's David Turnbull Lectureship recognizes the career of a scientist who has made outstanding contributions to understanding materials phenomena and properties through research, writing, and lecturing, as exemplified by the late David Turnbull of Harvard University. This year Phaedon Avouris of IBM's T.J. Watson Research Center in Yorktown Heights, New York, has been selected to give the 2011 Turnbull Lecture. Avouris is cited "for his development of nanoscience and nanotechnology, in particular for carbon nanotubes, graphene and semiconductor surfaces, through imaging and measurement of their electronic structure and electrical properties; their chemical and physical modification by scanning probe techniques; and their incorporation into advanced electronic and photonic devices." Avouris will be presented with the award at the 2011 MRS Fall Meeting in Boston.

Avouris's research work spans a broad spectrum and has had a profound impact on our understanding of the physics, chemistry, and applications of nanoscale materials—to such an extent that he can be considered as a founder of the fields of nanoscience and nanotechnology.

Avouris's early nanoscience work focused on the physical chemistry of the surfaces of solids with adsorbed atoms and molecules, using high-resolution electron energy-loss spectroscopy. With the development of the scanning tunneling microscope (STM), Avouris realized its potential for performing electron spectroscopy with atomic resolution. He made the first observations of local changes in the electronic structure of a Si surface upon chemical bond formation, and published early studies of surface chemical reactions, electron standing waves on surfaces, and STM tip-induced reactions.

Avouris's recent work has focused on carbon nanotubes (CNTs) and graphene for electronics and photonics applications. He is a leader in the field of carbon electronics, developing an early CNT field-effect transistor (FET), demonstrating the potential of CNTs to outperform silicon transistors, building the first logic gate using a single CNT and introducing charge-transfer doping. Avouris pioneered experiments on transport mechanisms in CNTs and developed techniques for separating CNTs of differing electrical properties. His demonstration of ambipolar transport in CNTs has had tremendous impact, and his team's ring oscillator built on a single CNT is still the most complex functional molecular device achieved. Avouris has led the development of CNT optoelectronics, raising hopes for a unified electronic and optoelectronic technology based on one material. In graphene, Avouris and his team fabricated nanoribbon FETs and demonstrated GHz operation, achieved record performance in graphene RF transistors on SiC, and produced the first photodetector operating from the infrared to the ultraviolet.

In addition to his research contributions to nanoscience (over 400 publications and 25,000 citations), Avouris has contributed to the development of the field of nanoscience in other ways. He organized an early conference on nanotechnology in 1992, sponsored by NATO and the Engineering Foundation, and edited one of the first books on nanoscience, *Atomic and Nanometer Scale Modification of Materials* (Plenum, 1993). He co-organized the first conference on "Atomic Level Electronics" (Adriatico Research Conference), the first Engineering Foundation Conference on "Nano- and Molecular Electronics," the first U.S. National Academy Conference on Nanoscience, and numerous symposia on nanoscience and nanotechnology for various professional conferences. He was a founding member of the Nanometer Scale Science and Nanotechnology division of the American Vacuum Society. He served on the advisory editorial boards of numerous journals devoted to nanoscience and technology and is an editor of the Springer book series on nanoscience. Avouris has published articles explaining nanoscience and nanotechnology in *MRS Bulletin, IEEE*


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*Spectrum, Physics Today, Materials Today, Accounts of Chemical Research,* and *Industrial Physicist*. He has trained many postdoctoral researchers who have gone on to academic and industrial positions around the world.

Avouris received his BSc degree in chemistry from the Aristotle University in Greece (1968) and his PhD degree in physical chemistry from Michigan State University (1974). After postdoctoral work in physical chemistry at the University of California–Los Angeles and AT&T Bell Labs, he joined the IBM Research Division in 1978 and became manager of Chemical Physics in 1984. He is currently an IBM Fellow and manager of Nanoscience and Nanotechnology. He has also been an adjunct professor at Columbia University and the University of Illinois at Urbana-Champaign.

Avouris is a member of the American Academy of Arts and Sciences and the Academy of Athens, as well as a senior member of IEEE and a fellow of the American Physical Society, the U.K. Institute of Physics, the American Association for the Advancement of Science, the American Vacuum Society, the New York Academy of Science, and the World Technology Network. His honors include the Irving Langmuir Prize for Chemical Physics (American Physical Society), the Medard W. Welch Award (American Vacuum Society), the IEEE Nanotechnology Pioneer Award, the Richard Feynman Prize for Nanotechnology (Foresight Institute), the Richard E. Smalley Prize (Electrochemical Society), the Julius Springer Award for Applied Physics, the AVS Nanotechnology Research Award, the IBM Pat Goldberg Memorial Award, and many IBM Outstanding Technical Achievement awards.

# Peidong Yang named 2011 MRS Medalist for nanowire research

The Materials Research Society has named Peidong Yang of the University of California–Berkeley and founder of Alphabet Energy, Inc., as MRS Medalist. He was cited for "outstanding contributions in the creative synthesis and assembly of semiconductor nanowires and their heterostructures, and innovations in nanowire-based photonics, thermoelectrics, solar energy conversion and nanofluidic applications." Yang will be recognized during the awards ceremony at the 2011 MRS Fall Meeting in Boston, where he will also give an award talk on "Semiconductor nanowires for solar energy conversion." Yang will give his presentation on Wednesday, November 30 at 12:15 p.m. in the Grand Ballroom of the Sheraton Hotel.

Yang, an MRS fellow and former recipient of the MRS Outstanding Young Investigator Award, has contributed broad-ranging breakthroughs to nanoscience and nanotechnology. He developed new and general approaches for the synthesis of metal oxide and semiconductor nanowires which opened significant opportunities for fundamental studies of the optical and electronic properties of quantum-confined and periodic systems, and applications of these materials for nanoelectronics and nanophotonics. His seminal optical studies of zinc oxide nanowires mark the discovery and demonstration of the first nanoscale laser in which the nanowire itself defines the optical cavity.

In the area of nanophotonics, Yang recently made seminal contributions to renewable energy through his studies of a nanowire-enabled dye-sensitized solar cell and a core–shell nanowire solar cell. By introducing the novel idea of a nanowire-based solar cell, Yang has demonstrated an ideal platform to independently study and optimize light absorption, charge separation, and charge collection. More recently, his group has been exploring the possibility of using the high-surface-area nanowire arrays as photoelectrodes for the purpose of artificial photosynthesis. Yang is currently the Department Head and North Site Director of the Department of Energy, Joint Center of Artificial Photosynthesis.

After receiving a BS degree in chemistry from the University of Science and Technology of China (1993) and a PhD degree in chemistry from Harvard University (1997), Yang did postdoctoral research on mesoporous materials at the University of California–Santa Barbara. He began his faculty appointment at Berkeley in 1999. Yang is an Alfred P. Sloan research fellow (2001–2004), and has been awarded a Camille Dreyfus New Faculty Award, the Arnold and Mabel Beckman Young Investigator Award, the National Science Foundation (NSF) Young Investigator Award, ExxonMobil Solid State Chemistry Fellowship, Dupont Young Professorship, Julius Springer Prize for Applied Physics, the American Chemical Society Pure Chemistry Award, Baekeland Medal, and the NSF Waterman Award.

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