



ENI AWARD 2022

Energy Transition

Naomi Halas and Peter Nordlander

Winners

Antenna-Reactor Plasmonic Photocatalysis for Sustainable Hydrogen Generation and Delivery

Biography

Naomi Halas

Naomi J. Halas is the Stanley C. Moore Professor of Electrical and Computer Engineering at Rice University, where she also holds faculty appointments in the Departments of Physics and Astronomy, Chemistry, Materials Science and Nanoengineering, and Bioengineering. She received her B. S. Degree in Chemistry from La Salle University in Philadelphia and her PhD in Physics from Bryn Mawr College. She was a graduate fellow at IBM in Yorktown, NY for her PhD research and a postdoctoral fellow at AT&T Bell Laboratories prior to joining Rice. She has been a key pioneer in demonstrating that the geometry of metallic nanoparticles can determine their optical properties, and pursues fundamental studies in plasmonics and nanophotonics as well as applications of nanophotonics ranging from biomedicine to photocatalysis to water treatment. She is author of more than 350 refereed publications with more than 80,000 citations (Web of Science), has more than 25 issued patents, and has presented more than 600 invited talks. Two companies have been founded based on her research: Nanospectra

Biosciences (Photothermal Cancer Therapy, for prostate cancer) and Syzygy Plasmonics (Low-temperature Photocatalysis for sustainable fuels). She has been awarded the Frank Isakson Prize and Julius Lilienfeld Prize of the American Physical Society, the R. W. Wood Prize of Optica, the American Chemical Society Award in Colloid Chemistry, the Spiers Medal of the Royal Society of Chemistry, and has received three honorary Doctorate of Science degrees. Halas has been elected to the National Academies of Sciences and Engineering, the Royal Society of Chemistry (UK), and the American Academy of Arts and Sciences.

Nordlander

Prof. Peter Nordlander obtained his PhD degree in Theoretical Physics at Chalmers University of Technology in Gothenburg in Sweden in 1985. After postdoctoral positions at IBM Thomas J. Watson Research Center at Yorktown Heights (USA) and AT&T Bell Laboratories at Murray Hill (USA) and at Rutgers University, he joined the faculty at Rice University in 1989 and is currently Wiess Chair of Natural Sciences and Professor of Physics and Astronomy, Professor of Electrical and Computer Engineering and Professor of Materials Science and Nanoengineering. He has been a Visiting Professor at University of Paris, at the Institute of Physics at the Chinese Academy of Sciences, a C.N. Yang Professor at the Chinese University of Hong Kong, at Peking University, and a Prominent Overseas Visiting Professor in the Department of Physics at Wuhan University. His research background is in theoretical condensed matter and nanoscience. His current research is focused on the theoretical and computational modeling of Plasmonics and Nanophotonics phenomena. He is an associate editor of ACS Nano. He is a fellow of APS, AAAS, SPIE, OSA, and MRS and is the recipient of the 1999 Charles Duncan Award for Outstanding Academic Achievement (Rice), the 2013 Willis E. Lamb Award for Laser Science and Quantum Optics, the 2014 Frank Isakson Prize for Optical Effects in Solids, the 2015 R. W. Wood Prize for Optics, and the 2019 Hershel M. Rich Invention Award (Rice). He has published more than 350 refereed articles, given more than 400 invited presentations at international conferences and workshops, has been cited more than 60,000 times with a Web of Science h-index above 120, and has been a Thomson-Reuters Highly Cited Researcher in Physics, Chemistry, or Materials Science since 2013.