

Jianwei (John) Miao is a Professor in the Department of Physics & Astronomy and the California NanoSystems Institute at UCLA. He received a Ph.D. in Physics, an M.S. in computer science, and an Advanced Graduate Certificate in Biomedical Engineering from the State University of New York at Stony Brook in 1999. After graduation, he became a staff scientist at the SLAC National Accelerator Laboratory, Stanford University. In 2004, he moved to UCLA as an assistant professor and was promoted to full professor in 2009. Miao is an internationally renowned pioneer in the development of novel imaging methods using both photons and electrons. He performed the seminal experiment of extending crystallography to allow the structure determination of non-crystalline materials in 1999, which is known as coherent diffractive imaging (CDI), lensless imaging or computational microscopy. CDI methods, such as plane-wave CDI, ptychography (i.e., scanning CDI) and Bragg CDI, have been broadly implemented using synchrotron radiation, X-ray free electron lasers, high harmonic generation, electron and optical microscopy.

Another important field that Miao has pioneered is atomic electron tomography (AET). In 2012, he applied CDI algorithms to demonstrate electron tomography at 2.4 Å resolution without assuming crystallinity or averaging. Subsequently, he applied AET to image the 3D core structure of edge and screw dislocations at atomic resolution and determine the 3D coordinates of thousands of individual atoms in a material with a 3D precision of 19 pm, which addressed Richard Feynman's 1959 challenge. In 2017, Miao measured the 3D coordinates of more than 23,000 atoms in an FePt nanoparticle, and correlated chemical order/disorder and crystal defects with material properties at the single-atom level. In 2019, he developed 4D AET to observe crystal nucleation at atomic resolution, showing early stage nucleation results contradict classical nucleation theory. More recently, he advanced AET to solve a long-standing grand challenge in the physical sciences – determining the 3D atomic structure of amorphous solids for the first time.

Miao is the Deputy Director of the STROBE National Science Foundation Science and Technology Center, an Associate Editor for *Science Advances*, and *Crystallography Reviews*. His honors and awards include the Werner Meyer-Ilse Memorial Award (1999), an Alfred P. Sloan Research Fellowship (2006-2008), the Outstanding Teacher of the Year Award in the Department of Physics & Astronomy at UCLA (2006-2007), a Kavli Frontiers Fellowship (2010), a Theodore von Kármán Fellowship from the RWTH Aachen University in Germany (2013), the Microscopy Today Innovation Award (2013), a University of Strasbourg Institute for Advanced Study Fellowship (2015-2017), a Fellow of the American Physical Society (2016), an NSF Creativity Award (2018), and the Innovation in Materials Characterization Award from the Materials Research Society (2021). He has been a Guest Scientist of the Institute of Physical and Chemical Research (RIKEN) in Japan since 2004.