

WINTER 2020 COLLOQUIUM SPEAKER

Conformal Solid-state Emitters Coupled to Plasmonic Nanocavities

Metal nanostructures concentrate optical fields into highly confined, nanoscale volumes that can be exploited in a wide range of applications, from sensing to imaging. Arrays of nanoparticles have significant advantages over the properties of single particles because they support collective modes that are ultra-narrow (< 3 nm) and with highly concentrated, near-field optical modes. The precise assembly of molecular and functional materials within these localized regions, however, is a long-standing challenge. This talk will describe how solid-state emitters ranging from 2D electronic materials to molecular crystalline materials to upconversion nanoparticles conformally coated on plasmonic nanoparticle arrays can result in unprecedented light-matter interactions, including hybrid modes with characteristics of both coupled materials to ultra-low threshold, continuous wave lasing.



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Dr. Teri Odom

Chair of Chemistry Dept,
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Teri W. Odom is Charles E. and Emma H. Morrison Professor of Chemistry and Chair of the Chemistry Department at Northwestern University. She is an expert in designing structured nanoscale materials that exhibit extraordinary size and shape-dependent optical properties. Odom has pioneered a suite of multi-scale nanofabrication tools that have resulted in plasmon-based nanoscale lasers that exhibit tunable color, flat optics that can manipulate light at the nanoscale and beat the diffraction limit, and hierarchical substrates that show controlled wetting and super-hydrophobicity. She has also invented a class of biological nanoconstructs that are facilitating unique insight into nanoparticle-cell interactions and that show superior imaging and therapeutic properties because of their gold nanostar shape. Odom is a Fellow of the Materials Research Society (MRS), the American Chemical Society (ACS), the American Physical Society (APS), the Optical Society of America (OSA), the Royal Society of Chemistry (RSC), and is an OSA Senior Member. She has received numerous other honors and awards, including the ACS National Award in Surface Science; a Research Corporation TREE Award; a U.S. Department of Defense Vannevar Bush Faculty Fellowship; the Associated Student Government Faculty Honor Roll; the Carol Tyler Award from the International Precious Metals Institute; a Blavatnik Young Scientist Finalist in Chemistry and Physical Sciences and Engineering; a Radcliffe Institute for Advanced Study Fellowship at Harvard University; the ACS Akron Section Award; an National Institutes of Health (NIH) Director's Pioneer Award; the MRS Outstanding Young Investigator Award; the National Fresenius Award from Phi Lambda Upsilon and the ACS; the Rohm and Haas New Faculty Award; an Alfred P. Sloan Research Fellowship; a DuPont Young Investigator Grant; a NSF CAREER Award; the ExxonMobil Solid State Chemistry Faculty Fellowship; and a David and Lucile Packard Fellowship in Science and Engineering. Odom was founding Chair of the Noble Metal Nanoparticles Gordon Research Conference (2010) and founding Vice-Chair of Lasers in Micro, Nano, Bio Systems (2018). She is on the Editorial Advisory Boards of ACS Nano, Materials Horizons, ChemNanoMat, and Bioconjugate Chemistry. She was founding Associate Editor for Chemical Science (2009-2013), founding Executive Editor of ACS Photonics (2013 - 2019), and is currently Editor-in-Chief of Nano Letters. Odom's Personal Story of Discovery was featured by ACS Publications

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