Strong Coupling with Plasmonic Lattice Cavities

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Abstract

Optical metasurfaces are engineered planar structures with rationally designed building blocks that can manipulate light in new ways. However, there has only been limited attention to the functionalization of the units or their integration with responsive materials, two factors that are critical for their next advances. This talk will describe how plasmonic nanoparticle lattices can function as versatile and advantageous optical cavities for strong light-matter coupling. We will discuss the formation of different types of exciton-polaritons depending on the emissive material, including fluorescent organic emitters in metal-organic frameworks, 2D perovskites, and semiconducting nanoplatelets. We will describe the different polariton dynamics in these systems and how the lifetimes affect prospects for polariton lasing and condensation.

Short Biography

Teri W. Odom is Joan Husting Madden and William H. Madden, Jr. 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 and physical properties.

Odom is a Member of the National Academy of Sciences (NAS) and the American Academy of Arts and Sciences (AmAcad) and a Fellow of the American Chemical Society (ACS), the Royal Society of Chemistry (RSC), the Materials Research Society (MRS), the American Institute for Medical and Biological Engineering (AIMBE), the American Physical Society (APS), Optica, and the American Association for the Advancement of Science (AAAS). She is a Senior Member of SPIE. Select awards include: the SPIE Mozi Award, the RSC Centenary Prize, the ACS National Award in Surface Science, an NIH Director's Pioneer Award, the MRS Outstanding Young Investigator Award, the National Fresenius Award from Phi Lambda Upsilon, an Alfred P. Sloan Research Fellowship, and a David and Lucile Packard Fellowship in Science and Engineering.

Odom was founding Chair of the Noble Metal Nanoparticles Gordon Research Conference and founding Executive Editor of *ACS Photonics*. Currently, Odom is Editor-in-Chief *of Nano Letters*.