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Engineered Plasmonic Nanostructures for Biotechnology and Photonics

Abstract: Recent advances in top-down nanofabrication technologies enable unprecedented capabilities to engineer metallic nanostructures and harness surface plasmons, which are electron density fluctuations at the metal interface. Enhancing light-matter interactions in engineered optical nanostructures can benefit many applications in biosensing, super-resolution imaging, and spectroscopy. This presentation will focus on a series of nanofabrication methods, including focused ion beam (FIB) lithography, nano-imprint lithography, atomic layer deposition, and template stripping, to rapidly produce pure and ultra-smooth plasmonic devices, and demonstrate their utility in various applications such as membrane protein biosensing, surface-enhanced Raman spectroscopy, and super-resolution imaging.

Biography: Sang-Hyun Oh received his B.S. in Physics from KAIST, Korea in 1996, and Ph.D. in Applied Physics from Stanford University in 2001. After postdoctoral research at Bell Laboratories in Murray Hill and University of California at Santa Barbara, he joined the University of Minnesota, Twin Cities, as an Assistant Professor of Electrical and Computer Engineering in 2006, where he currently runs a lab focused on plasmonics, nanofabrication, and biosensing. He is a recipient of the Office of Naval Research (ONR) Young Investigator Award, DARPA Young Faculty Award, NSF CAREER Award, and ACS Petroleum Research Fund Doctoral New Investigator Award.