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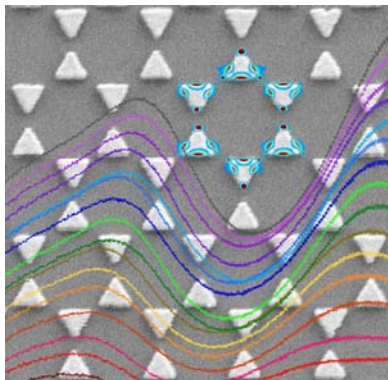
IFR conference room

Raman Imaging with Plasmonic Devices.

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Due to the inherently weak Raman scattering cross section, the signals of diluted solutions and monolayer films are often difficult to measure, resulting in long acquisition times and poor signal to noise ratio. With Surface Enhanced Raman Spectroscopy (SERS), these analytes are combined with gold or silver nanostructured surfaces, increasing the Raman vibrational signal by several orders of magnitude, leading to short acquisition times. More importantly, using advanced nanofabrication techniques, the properties of the plasmon wave can be tuned accurately and the metallic nanostructures can be reproduced accurately. We present here examples of Raman imaging on different chemical systems adsorbed on plasmonic nanostructures which have been fabricated using Langmuir-Blodgett and electron beam lithography techniques. The extension of SERS to Tip Enhanced Raman spectroscopy (TERS) is also presented with the main goal to improve spatial resolution. In this technique, a local metallic probe mounted on an AFM is interacting with a sample and induces enhancement of the Raman signal at the apex of the tip. The position in xyz position is controlled precisely by the Raman/AFM communication protocol, analyzing the sample topography and Raman signal simultaneously. We present here results conducted on silicon nanowires.



Fisher's Pattern made by ebeam lithography (gold over glass). EM field calculated by FDTD around a single lattice. Absorption bands of the plasmonic platforms