

Physical Chemistry Seminar

Tuesday,
October 30, 2012

11:00 am

Room 1315
Chemistry Building

Super-resolution imaging of plasmonic nanoparticle hot spots



Professor Katherine Willets
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Host: Professor Randy Goldsmith

Noble metal nanoparticles can support localized surface plasmons, which lead to enhanced electromagnetic fields at the nanoparticle surface. While extensive theoretical calculations have been performed that predict how these enhanced electromagnetic fields are distributed on the nanoparticle surface, confirming these results using optical techniques is extremely challenging due to the diffraction limit of light. Because the metal nanoparticles are smaller than the wavelength of light, they appear as diffraction limited spots in optical images, obscuring the local electromagnetic field enhancements. This talk will describe recent efforts to use high resolution single molecule imaging techniques to measure how electromagnetic fields are locally enhanced on the surface of noble metal nanoparticles. Single molecule spectroscopy allows us to beat the diffraction limit by over an order of magnitude, providing the necessary resolution to optically image electromagnetic field enhancements on noble metal nanoparticle surfaces.

Refreshments will be available prior to the seminar at 10:45 a.m. outside room 1315

Graduate Students may meet with the speaker at 1:00 p.m. in Room 8335