



Physics Colloquium



Thursday, April 14th at 3:30 pm in SC 234

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Nanoparticle and Nanoscale Light Manipulation

Based on the deep understanding of the light-matter interaction at nanoscales, there has been a revolution in optics in the last decade. First, light can transfer its momentum to nanoparticles, therefore we can use light to trap and manipulate nanoparticles. Second, nanoparticles or nanostructures can also be used to control light in nanoscales based on the plasmonic effect. The ability of controlling light at nanoscales gives us a new way of looking at the engineer problems in optics and allows us to design novel optical devices with functionalities that cannot be possibly achieved with conventional diffraction-limited optics. In this talk, I will first show how light can be used to trap and manipulate highly scattering nanoparticles with significantly reduced trapping power. Then I will show how we can control light in nanoscales with encoded nanostructures for applications in single molecule detection at high concentrations.

Refreshments 3:00-3:20 pm in SC 103