



**Optical Society of America  
UC Irvine Student Chapter  
Presents:**

**“Frontiers in Photonics” Seminars**

**Max Abashin**  
**(Y. Fainman Research Group)**  
*University of California, San Diego*

**“Nanophotonics for Information Systems Integration”**

**WHEN:** Friday, May 4, 2007, 2:00 - 3:00 PM  
**WHERE:** 2201 Natural Sciences 2

(Refreshments will be provided)

**Abstract**

Nanophotonics is a rapidly developing area of science and engineering nowadays and it is finding applications in information technologies, health care, lighting, sensing, and so on. For a specific device, scaling its size to "nano" usually means not only miniaturization, but also parallel integration, faster operation, cost effective fabrication and lower power consumption. Another interesting application is creating artificial materials with unique physical properties such as huge birefringence, low speed of light propagation, and even negative index of refraction. Characterization of nanoscale optical devices and phenomena requires special tools that can go beyond diffraction resolution limit. Near-field Scanning Optical Microscopy (NSOM) technique can perform sub-diffraction resolution imaging by collecting evanescent and propagating fields using small aperture brought close to the surface of the device. By combining this technique with heterodyne detection we were able to image amplitude and phase distributions of in-operation nanophotonic devices and thus characterize different local parameters such as loss and effective refractive index.

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