



*NEBRASKA CENTER FOR MATERIALS AND  
NANOSCIENCE SEMINAR SERIES PRESENTS*



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### **OPTICAL TRAP ASSISTED NANOPATTERNING: LASER DIRECT WRITING AT THE SUB-MICRON SCALE**

The ability to directly print patterns on size scales below 100 nm is important for many applications where the production or repair of high resolution and density features are important. Laser-based direct-write methods have the benefit of quickly and easily being able to modify and create structures on existing devices, but throughput is low and feature sizes are conventionally limited by diffraction. In this presentation, we review methods to overcome these limits and introduce a new method of probe-based near-field nanopatterning with the ability to parallelize the direct-write process. A CW laser is used to optically position arrays of dispersed microspheres near a substrate using a 2-d Bessel beam optical trap while a second, pulsed laser is directed through the bead and used to modify the surface below the microsphere, taking advantage of the near-field enhancement. Issues of feature size control, positional accuracy and scaling for high-throughput and large area nanomanufacturing will be discussed.

**Host:  
Prof. Yongfeng Lu  
Electrical Eng.**

**Wednesday, March 3, 2010  
237 Scott Engineering Center  
10:30 a.m.**

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