

# **WINTER 2004**

## **F21C/Food Science & Engineering Unit**

### **SEMINAR SERIES**

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Department of Electrical and Computer Engineering  
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**TITLE, ABSTRACT:** LCW-BASED BIOSENSORS

Liquid core waveguides (LCW) are optically transparent conduits where the filling liquid, also optically transparent, has a higher refractive index than the conduit material. We have reported, for the first time, fabrication and testing of chip-scale Teflon AF coated LCWs in microchannels etched in silicon and glass substrates. The optical throughput of LCWs can be improved significantly by using lower refractive index cladding layer. Since the light channeling efficiency depends on the ratio of the coating and water refractive indexes, the use of nanoporous silica for coating the channels is an innovative and effective way to improve collection efficiencies for fluorescence measurements in liquid core waveguides. Placing a cell within one of these waveguides will allow virtually all of the light emitted from the cell to be collected and thus greatly increase the chances of resolving low levels of biological systems. I will present our work in the microfabrication and testing of Teflon-coated LCWs, preparation and characterization of nanoporous silica films and fabrication of micropumps using soft lithography processes.

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**Tuesday, February 24, 2004, 4:00pm, AG ENGR Bldg. 105**

Refreshments Will Be Served