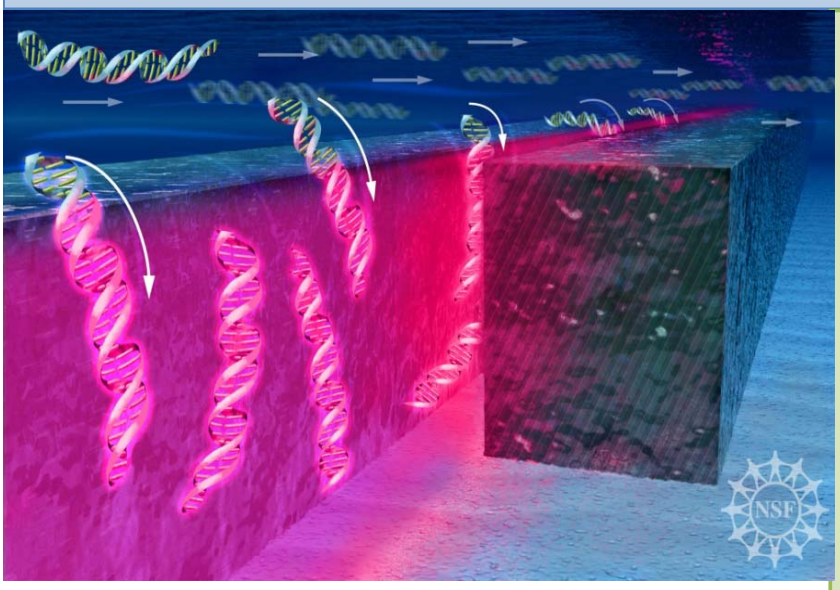
SEMINAR:

"Optofluidics for Biomolecular Analysis"



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David Erickson
Dr. Erickson's research includes micro-, nano- and optofluidic devices for biomolecular detection, single molecule analysis, directed assembly and autonomous microsystems. Prior to joining the faculty in September 2005, Dr. Erickson received his PhD from the University of Toronto (1004) and was a postdoctoral scholar at the California Institute of Technology (2004-2005). In 2007, Dr. Erickson received the DARPA-MTO Young Faculty Award and the Robert '55 and Vanne '57 Cowie Excellence in Teaching Award. He is currently an associate editor of the Journal Smart Materials and Structures and the Journal of Microfluidics and Nanofluidics.

Monday
January 26, 2009
2:00-3:00
Engineering 2 Building
Room #599

Abstract
Optical devices which incorporate liquids as a fundamental part of the structure can be traced at least as far back as the 18th century where rotating pools of mercury were proposed to create smooth mirrors for use in reflecting telescopes. The development of modern microfluidic devices has enabled a present day equivalent of such devices centered on the marriage of fluidics and optics called "Optofluidics." In this talk I will present an overview of optofluidics and then focus on two specific application areas.
First, I will discuss integration of subwavelength fluidic networks with optical resonators to create sensitive, specific and highly parallel biomolecular sensors, for example Dengue virus detectors on a silicon-on-insulator platform.
Secondly, I will demonstrate how photonic devices can be used to drive micro- and nanoscale transport processes when traditional mechanisms (e.g. pressure and electrokinetics) fail. As an example, I will discuss optical trapping of organic and inorganic targets ranging in size from tens of microns to handfuls of nanometers using slot waveguides and ring resonators.

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Presented by the
W. M. Keck Center for
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Host: Professor Holger Schmidt