

Frontiers in the quest for lab-on-a-chip sensors for biomedical and biodefense applications



Date and Time: Thursday, Feb. 26th, at 5:30 PM [Food and beverage: 5:15 PM]
Place: AV Williams: Room 2460, University of Maryland, College Park
Socialize and have dinner with the speakers at a local restaurant after the talks
Sponsored by the DC-NOVA Chapter of the IEEE-Photonics Society
For details see: http://ewh.ieee.org/r2/wash_nova/leos/index.html

Special Plenary Session Featuring:

Professor Ian White
University of Maryland

Title: Advanced photonic biosensing techniques for next generation biomedical devices

Abstract: The rush is on to develop a new generation of biomedical devices for the study and detection of disease at the molecular level. In this presentation, new developments and trends in photonic biosensing will be discussed. Techniques that avoid the cost and complexity associated with fluorescence-based biosensors will be emphasized. Included in this class are a number of promising techniques, including surface plasmon resonance, optical ring resonators, and photonic crystals. Additionally, the talk will emphasize the need for integration of biosensors into sample analysis systems that can finally achieve the long-awaited lab-on-a-chip.

Dr. Frances S. Ligler
The Naval Research Laboratory

Title: The Microflow Cytometer.

Abstract: Over the last decade, flow cytometers have become smaller in size and less expensive, but this sheath flow design is not amenable to miniaturization to the point that the systems are portable. We have developed a microfluidic sheath flow system that is robust, simple to fabricate, and very compact. This sheath flow device forms the basis of a microflow cytometer that has demonstrated the capability for 4-color analysis that is competitive with the larger, commercial systems for environmental monitoring, rapid point-of-care diagnostics, and on-site detection of biothreat agents.

Biography: Ian White is the newest faculty addition to the Fischell Department of Bioengineering at the University of Maryland. Prof. White received his PhD from Stanford University while studying photonic devices and optical communication. He then worked at Sprint's Advanced Technology Labs as a Member Technical Staff charged with technology evaluation for their optical network. In 2005, Dr. White left Sprint and began a post-doc at the University of Missouri Life Sciences Center in Biological Engineering, where he began developing novel optical biosensors. In 2008, he was hired as an Assistant Professor in the Fischell Department of Bioengineering.

Biography: Frances S. Ligler, D.Phil., D.Sc. (Oxford University), is currently the Navy's Senior Scientist for Biosensors and Biomaterials and vice chair of the Bioengineering Section of the National Academy of Engineering. She has published over 300 full-length articles in scientific journals and has 24 issued patents; together they have been cited over 5300 times. She performs research in biosensors, microfluidics, and nanotechnology, and serves as Associate Editor for both *Analytical Chemistry* and *Biosensors & Bioelectronics*. In 2003, she was awarded the Homeland Security Award by the Christopher Columbus Foundation and the Presidential Rank of Distinguished Senior Professional by President Bush.