

NSF Nanoscale Science and Engineering Grantees Conference

Keynote talk

Lighting up Biosensors

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Abstract

Optical biosensors are defined as portable optical devices that use biorecognition molecules to interrogate a sample for the presence of a target. The capabilities of optical biosensors have expanded rapidly with advances in miniature optical components, nanotechnology and molecular engineering. Biosensors to meet needs in health, environmental monitoring and food safety have become commercially available, with many more in the pipeline. I will survey innovative approaches to overcoming existing hurdles to practical biosensor designs and explore potential areas for future breakthroughs in optical biosensor technology. In particular, I will address the changing paradigm for optical biosensor design in which the sensing elements are introduced into the sample rather than the sample being introduced into the sensor. For more detail, see Ligler and Gooding (2019) *Anal.Chem.* 91, 8732-8738.

Biography

Frances S. Ligler is the Lampe Distinguished Professor of Biomedical Engineering in the Joint Department of Biomedical Engineering in the College of Engineering at North Carolina State University and School of Medicine at the University of North Carolina at Chapel Hill and an elected member, past chair of the Bioengineering Section, and Councillor of the U.S. National Academy of Engineering. Prior to 2013, she was at the U.S. Naval Research Laboratory (NRL) for 27 years, 18 of which she was the U.S. Navy Senior Scientist for Biosensors and Biomaterials. Currently working in the fields of regenerative medicine, tissue-on-chip, and microfluidics, she has also performed research in biosensors, biochemistry, immunology, and proteomics. She has over 400 full-length publications and 34 patents, which have led to 11 commercial biosensor products and have been cited over 18000 times with H=78 (Google Scholar). Fran was elected an SPIE Fellow in 2000, a Fellow of AIMBE in 2011, a Fellow of AAAS in 2013, a Fellow of the National Academy of Inventors in 2016, and an Honorary Member of the Hellenic Society for Nanotechnology in Health Sciences in 2017. In 2014 and 2018, she was awarded honorary doctorates from the Agricultural University of Athens, Greece and Furman University, respectively. She is a 2017 inductee of the U.S. National Inventors Hall of Fame.