

# THE DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING SPEAKER SERIES

**PRESENTS**

## **Silicon-based optical biosensors: From on-chip to portable diagnostics**



Sharon Weiss  
Professor of Electrical Engineering  
Vanderbilt University

Monday, 11/1, 9:55 am

Join Zoom Meeting

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Meeting ID: 976 269 9678

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### **LECTURE ABSTRACT**

Silicon optical biosensors hold great promise as low-cost, lab-on-chip sensor array elements due to their compatibility with both standard microelectronics processing and standard surface functionalization techniques. The sensitivity of these optical biosensors is derived from the level of interaction between light and the target molecules to be detected as well as the ability of the sensor to selectively and robustly capture the desired target molecules. This talk will discuss approaches to increase detection sensitivity through the use of on-chip resonant cavity geometries and porous substrates, as well as opportunities to leverage smartphones as a portable optical detection platform. Results will be presented for the detection of various nucleic acids and proteins.

### **SPEAKER BIOSKETCH**

Sharon Weiss is a Cornelius Vanderbilt Chair in Engineering and Professor of Electrical Engineering, Physics, and Materials Science at Vanderbilt University. She also serves as Director of the Vanderbilt Institute of Nanoscale Science and Engineering. Prof. Weiss received her Ph.D. degree from the Institute of Optics at the University of Rochester. Her research group primarily focuses on silicon photonics for optical biosensing and optical communication, as well as hybrid and nanocomposite material systems. Prof. Weiss is a Fellow of SPIE and OSA and has been awarded a Presidential Early Career Award for Scientists and Engineers, National Science Foundation CAREER award, Army Research Office Young Investigator Award, and IEEE Photonics Society Distinguished Lecturer award. She has also earned a Vanderbilt Chancellor's Award for Research and Excellence in Teaching Award.

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