Distinguished Lecture on Photonics

Nell'ambito del corso di Optoelectronics della Laurea Magistrale in Ingegneria Elettronica e del Dottorato in Information and Communication Technology con la collaborazione dell'IEEE Photonics Society - Italy Chapter, la Prof. Sharon Weiss - Vanterbuilt University, USA terrà un seminario dal titolo:

Exploiting Light-Matter Interaction in Silicon Photonics for Biosensing

Il seminario, aperto a studenti e docenti interessati, avrà luogo il giorno 17 novembre 2017 alle ore 12:00 nella sala affrescata del chiostro della Facoltà di Ingegneria di San Pietro in Vincoli in via Eudossiana, 18.

ABSTRACT. Silicon has traditionally been associated with being the most favorable material platform for most modern microelectronics technologies due to its electronic properties, compatibility with lithographic patterning, and earth abundance. However, silicon is also a favorable material platform for supporting light propagation. This talk will focus on design approaches for enhancing light-matter interaction on a silicon platform for the application of molecular detection of chemicals and biomolecules. Optical biosensors based on silicon 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 fundamentally derived from the level of interaction between light and the target molecules to be detected. Specific approaches to increasing light-matter interaction of silicon photonic biosensors will be presented. In particular, several experimentally realized biosensor designs on silicon-on-insulator and porous silicon substrates, including photonic crystals, ring resonators, and Bloch surface wave structures will be described, along with illustrative examples of specific molecular detection of proteins, DNA, and other small molecules using these silicon photonic components.



BIOGRAPHY. Sharon Weiss is a Cornelius Vanderbilt Chaired Professor of Electrical Engineering, Physics, and Materials Science at Vanderbilt University and she is Deputy Director of the Vanderbilt Institute of Nanoscale Science and Engineering (VINSE). 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 – including porous silicon – for optical biosensing and optical communication, as well as hybrid and nanocomposite material systems. Prof. Weiss is an OSA Fellow, and has been awarded a Presidential Early Career Award for Scientists and Engineers (PECASE), an NSF CAREER award, an ARO Young Investigator Award, and an IEEE Photonics Society Distinguished Lecturer award. She was also named an inaugural Chancellor's Faculty Fellow at Vanderbilt. Prof. Weiss has published more than 120 journal and conference papers and has been awarded six patents.



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