NANYANG TECHNOLOGICAL UNIVERSITY

PAP Seminar Announcement

Nanophotonics Technology and Applications

By

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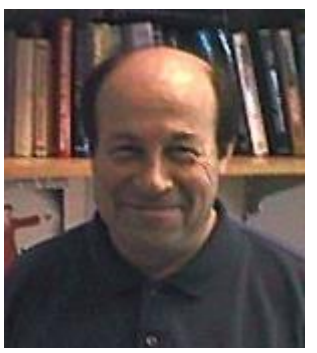
Date: 9th July 2013, Tuesday
Time: 10.30am to 11.30am
Venue: MAS Executive Classroom 1 (SPMS-MAS-03-06)
Host: Asst. Prof. Cesare Soci



Abstract

Various future system applications that involve photonic technology rely on our ability to integrate it on a chip to augment and/or interact with other signals (e.g., electrical, chemical, biomedical, etc.). For example, future computing and communication systems will need integration of photonic circuits with electronics and thus require miniaturization of photonic materials, devices and subsystems. Another example, involves integration of microfluidics with nanophotonics, where former is used for particle manipulation, preparation and delivery, and the latter in a large size array form parallel detection of numerous biomedical reactions useful for healthcare applications. To advance the nanophotonics technology we established design, fabrication and testing tools. The design tools need to incorporate not only the electromagnetic equations, but also the material and quantum physics equations to include near field interactions. These designs are integrated with device fabrication and characterization to validate the device concepts and optimize their performance. Our research work emphasizes the construction of passive (e.g., engineered composite metamaterials, filters, etc.) and active (e.g., nanolasers) components on-chip, with the same lithographic tools as electronics. In this talk, we discuss some of the passive metamaterials and devices that recently have been demonstrated in our lab. These include our most recent results on monolithically integrated short pulse compressor utilized with SOI material platform and design, fabrication and testing of nanolasers constructed using metal-dielectric-semiconductor resonators confined in all three dimensions.

Short Biography

Y. Fainman received the Ph. D. from Technion in 1983. He is a Cymer Professor of Advanced Optical Technologies and Professor of ECE at the University of California, San Diego (UCSD). He is also Chair of the ECE Department at UCSD. His current research involves near field optical science and technology, nanophotonics, nanolasers and ultrafast optics. He is a Fellow of OSA, IEEE, and SPIE. He Chaired, co-Chaired and served on numerous program committees for various conferences for OSA, IEEE/LEOS, and SPIE. He is a recipient of the Miriam and Aharon Gutvirt Prize, Technion, Haifa, Israel (1982), Lady Davis Fellowship (2006), Brown award (2006) and Gabor Award (2012). He was a General Chair for Inaugural OSA Topical Meeting on Nanophotonics for Information Systems in 2005 and served as a topical editor and board member for various journals. He contributed over 200 manuscripts in peer review journals and over 400 conference presentations and conference proceedings.

This seminar is jointly organized by IEEE Photonics Society and CDPT.

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