

Avviso di Seminario

Nel quadro delle iniziative scientifiche dell'Italian Chapter dell'IEEE-Photonics Society, il Prof. Ibrahim Abdulhalim della Ben Gurion University of the Negev, Beer Sheva, Israel, terrà il seminario su:

Liquid Crystal Devices for Photonics and Biomedical Optics Applications

Il seminario, aperto a studenti e docenti interessati, avrà luogo il giorno 22 Luglio 2014 alle ore 11.30 nell'Aula affrescata nel chiostro della Facoltà di Ingegneria, in via Eudossiana, 18.

ABSTRACT. Liquid crystal devices are under extensive study for photonic and optical non-display applications. One of the important areas where they can significantly improve applications is in optical imaging in which they can function as spatial light modulators for wavefront correction, tunable filtering for hyperspectral imaging, tunable focusing and polarization control for polarimetric imaging with their distinct advantage of being miniature and requiring low voltage and low power consumption. A newly emerging field called LCs photonics is becoming more and more active in which the strong electrooptic properties of LCs are harnessed for photonic applications other than displays. LCs can flow and fill small gaps; hence they can be integrated into nanophotonic structures in planar or cylindrical geometries such as in photonic crystal fibers.

Recently we have been developing variety of specially designed LC devices integrated into imaging systems for specific applications such as (i) wideband tunable filters for hyperspectral imaging and frequency domain optical coherence tomography, (ii) discrete tunable filter for multispectral imaging, (iii) compact polarization rotator for polarimetric imaging, (iv) fast phase retarder for phase shift interferometry, (v) wideband achromatic waveplate, (vi) annular SLM for extended depth of focus, (vii) polarization independent LCFP tunable filter, and lately (viii) optically addressed SLMs. The main concepts of these devices and their functionality into imaging systems such as in skin spectropolarimetric imaging and full field optical coherence tomography will be reviewed in this talk.

Ibrahim Abdulhalim is a professor in the Department of Electrooptic Engineering at Ben Gurion University. He has worked in research and development in variety of academic institutions and industrial companies such as: the Optoelectronic Computing Systems Center in the University of Colorado at Boulder, USA, the Optoelectronics Research Center of Southampton University, England, the Thin Films Center of the University of Western Scotland, KLA-Tencor and Nova measuring instruments, and in GWS-Photonics. Since October 2005 he joined the Department of Electrooptic Engineering at Ben Gurion University. His current research activities involve: liquid crystal devices, nanophotonic and plasmonic structures for biosensing, improved biomedical optical imaging techniques such as spectropolarimetric imaging and full field optical coherence tomography using liquid crystal devices. Prof. Abdulhalim has published over 120 journal articles, 60 conference proceedings papers, 10 book chapters, coauthored one book titled: Integrated Nanophotonic Devices (Micro and Nano Technologies), Co-edited a book to appear in 2014 titled: Signal amplification in optical biosensing, and has over 10 patents. He became a fellow of the Institute of Physics, UK in 2004 and SPIE fellow in 2010. He is an associate editor of the SPIE Journal of NanoPhotonics and for the Journal of Physics Express. Prof. Abdulhalim is acting as the head of Department of Electrooptic Engineering since 2007.