

Avviso di Seminario

Nel quadro delle iniziative scientifiche dell'Italian Chapter dell'IEEE-Photonics Society, il Prof. Mark Kuzyk della Washington State University terrà un seminario su:

Smart Polymeric Materials: From Fundamental Science to New Technologies

Il seminario, aperto a studenti e docenti interessati, avrà luogo il giorno 30 Maggio alle ore 16 nell'Aula Affrescata nel chiostro della Facoltà di Ingegneria, in via Eudossiana, 18.

ABSTRACT. The use of dye-doped polymers for nonlinear optics was originally motivated by their good optical quality due to the polymer host and the large nonlinear-optical response imparted by the guest chromophores. Dye-doped polymers are attractive also because the material's optical and rheological properties can be controlled based on the choice of host polymer and dopant. Indeed, the development of photorefractive polymers, which required photosensitive materials with a large electro-optical effect and charge mobility, is an example of an intentionally designed material with specialize functionality.

Based on the versatility of dye-doped polymers, our group demonstrated the first all-optical circuit that actively stabilized the position of mirror using the photomechanical effect in a polymer-optical fiber. This demonstration was significant because all functions of sensing, logic, transmission and actuation was optical, with no use of electronics aside from the power supplied to the laser. These 4 functions were later miniaturized into an element in an optical fiber, called a Photomechanical Optical Device (POD). The fact that many PODs can be integrated into a fiber forming Waveguide-Integrated Smart PODs (WISPs) leads to the real possibility of the development of ultra-smart morphing materials.

In this talk, Prof. Kuzyk will discuss optical measurements and models that are used to determine the mechanisms of the photomechanical effect in a liquid crystal elastomer and show that these materials can be cascaded together - a requirement for making devices.

BIOGRAPHY. Mark Kuzyk is Full Professor of Physics at the Washington State University since 2001 and Regents Professor since 2009. During the early stages of his career he was member of the technical staff at , AT&T Bell Laboratories(1985-90). He published more than 300 papers on peer-review journals in the field of nonlinear optics.

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