Αριστοτελειο Πανεπιστημιο Θεσσαλονικης

ΣΕΜΙΝΑΡΙΟ
ΤΜΗΜΑ ΦΥΣΙΚΗΣ

Τετάρτη 9 Απριλίου 2014

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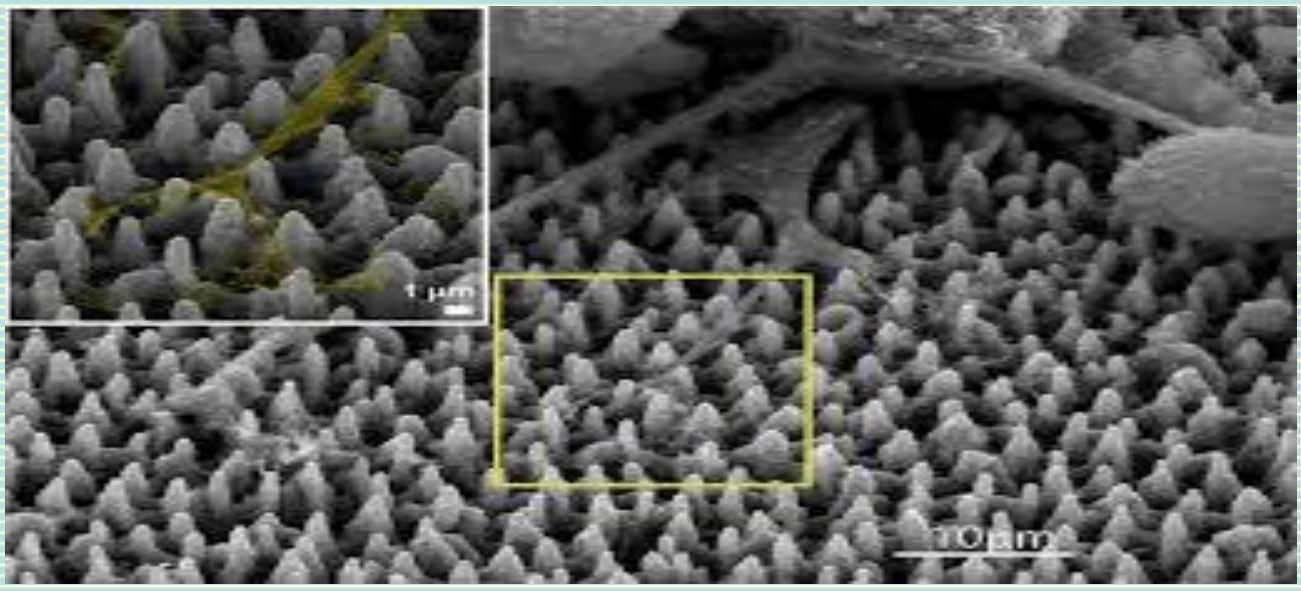
Αίθουσα A_{31}

Κύκλος σεμιναρίων

... ένα ταξίδι σύγχρονης στον κόσμο της Φυσικής

στο Τμήμα Φυσικής

Control and Monitoring of Cells with Organic Electronics



Prof. Roisin M. Owens
Department of Bioelectronics
Centre Microélectronique de Provence, France

Organic bioelectronics refers to the coupling of organic electronic based devices with biological systems, in an effort to bridge the biotic/abiotic interface. We focus on the unique properties of organic electronic materials that allow easy fabrication, and flexibility in design as well as chemical tunability, to develop state-of-the-art tools to monitor cells *i.e.* for diagnostic purposes following exposure to toxins or pathogens and control cells, for example to create more '*in vivo*' like environments. We work not only with commercially available materials, but are also optimizing custom materials for use in devices by changing morphology, adding biomolecules to increase biocompatibility, and incorporating biorecognition elements directly into the materials. Our goal is to develop physiologically relevant *in vitro* systems with integrated monitoring systems that obviate the need for animal experimentation in diagnostics, toxicology or drug development. To this end, we have successfully demonstrated the use of the organic electrochemical transistor (OECT) for monitoring *in vitro* models of the gastrointestinal tract, the kidney and the blood brain barrier. We show improved temporal resolution and sensitivity compared to existing techniques, and further, take advantage of the flexibility of design and fabrication of organic electronic devices to include microfluidics, optical monitoring and multiplex acquisition systems.

Το προφίλ του ομιλητή

Róisín Owens is an Associate Professor in the Department of Bioelectronics at the Centre Microélectronique de Provence. She received her BA in Biochemistry at Trinity College Dublin, and her PhD in Biochemistry and Molecular Biology at Southampton University. In her early postdoc work she specialized on biochemical aspects of infectious diseases, including enteric pathogens and tuberculosis, but then moved into novel therapeutics (for rhinovirus) using protein engineering and development of new technologies for pathogen detection. A continued interest in novel engineering technologies for biological applications led her to the field of organic bioelectronics. Her current research centers on application of organic electronic materials for diagnostics *in vitro*. She has received several awards including the European Research Council starting grant, a Marie Curie fellowship, and an EMBO fellowship.

andreas.skouloudis@jrc.ec.europa.eu