LAURA M. LECHUGA 'Photonic Nanobiosensor Platforms for Point‐of‐Care Diagnostic Devices'

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October 18, 2010

Seminar, October 18, 2010, 12:00. Seminar Room

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Nowadays most of the tests for diseases detection are based on timeconsuming, expensive and sophisticated techniques which can only be done by

specialised technicians in laboratory environments. Usually those tests require sampling and labelling with fluorescent or radioactive tags. Major unmet needs are methods which can allow the identification of any disease (as cancer) at the earliest stage possible in a fast, simple and cost?effective way. Photonic biosensors within labon?a?chip platforms could afford the decentralization of clinical diagnostics to point?ofcare (POC) settings, allowing tests in primary care facilities and outpatient clinics, in hospital units, workplaces and homes, among others.

Taking into account this demand, we are developing highly?competitive labelfree biosensing systems which are integrated in portable platforms. Different photonic biosensor technologies are pursued in parallel: integrated interferometer devices (Mach?Zehnder and bimodal waveguides), plasmonic nanostructures and waveguided microcantilevers. Our main aim is to end in a highly sensitive platform for POC analysis based on label?free detection and integrated in a microsystem instrument fabricated with low?cost technologies of polymer and silicon, and meeting the requirements of disposability and portability. Moreover, applications of the biosensors for detection of analytes related to medical diagnostics in human samples (hormones, tumour biomarkers, DNA single mutations, RNA, etc) will be discussed.

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Hosted by Prof. Valerio Pruneri