

**19 Luglio 2012 ore 10,30****Aula "B. Brunelli"****BLOCH SURFACE WAVES ON PHOTONIC CRYSTALS -  
APPLICATIONS TO BIOPHOTONICS*****Prof. Francesco Michelotti***

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Surface plasmon resonance (SPR) optical biosensors have been established as a mature technology for simple and fast label free biodetection. In commercial SPR platforms surface plasmon polaritons (SPP), are used to sense the refractive index changes at the sensor surface, mainly in real-time conditions. An additional use of surface plasmons is for fluorescence enhancement effects (namely, surface Plasmon coupled fluorescence -SPCE- and surface plasmon field-enhanced fluorescence SPFS-).

Recently, electromagnetic modes propagating at the interface between a homogeneous medium and a finite one-dimensional photonic crystal (1DPC), also named Bloch Surface Waves (BSW), have been proposed as an alternative to SPP. BSW offer several possible advantages as compared to SPP. Their dispersion can be designed at almost any wavelength by properly choosing the refractive index and thickness of the layers constituting the 1DPC. Since dielectrics in their transmission window are characterized by much lower extinction coefficients than metals, BSW resonances appear much narrower than those observed for SPP, with an expected increase of sensor performances both for refractometric and for enhanced fluorescence sensing.

In this contribution, we report both on the direct experimental comparison of the sensitivity of BSW and SPP based biosensors and the application of BSW in fluorescence microscopy. At the end of the seminar the speaker will also report on the recent acceptance of an EU-STREP project proposal and on its future activities in the time frame 2012-2015.