



DIPARTIMENTO DI FARMACIA E BIOTECNOLOGIE

---

## **AVVISO DI SEMINARIO**

il giorno **venerdì 5 luglio 2019**  
alle ore **14:30**  
presso l'Aula 2, via Belmeloro 6, Bologna

il **Dott. Luca Guerrini, PhD**

Department of Physical Chemistry and EMaS, Universitat Rovira i Virgili,  
Tarragona, Spain  
(ospite Dott. Matteo Masetti)

terrà un seminario dal titolo:

**SURFACE-ENHANCED RAMAN SCATTERING  
(SERS) FOR BIOSENSING: FROM  
FUNDAMENTALS TO REAL-LIFE APPLICATIONS**

Collegli e studenti sono cordialmente invitati

*Commissione Ricerca e Attività Correlate - FaBiT*

---

---

## ABSTRACT

In recent years, nanotechnological approaches have emerged as promising tools to tackle new challenges in biomedical research. Notably, plasmonic optical biosensors have drawn a great deal of interest in nanomedicine because of their capability to overcome major limitations of conventional methods. Within the field of plasmonics, surface-enhanced Raman scattering (SERS) spectroscopy has emerged as a powerful analytical tool for fast, low-cost, ultrasensitive and multiplex detection of biomolecules. SERS benefits from the synergistic combination of the intrinsic structural specificity and experimental flexibility of Raman spectroscopy, with the outstanding sensitivity provided by plasmonic nanomaterials. Recent spectacular advances in nanofabrication tools and the ongoing revolution of spectroscopic instrumentation finally led the way for the current transition of SERS beyond the basic grounds of academia to viable commercial products. Fundamental concepts will be discussed, followed by representative examples of relevant SERS biosensing applications.

## BIOGRAPHICAL SKETCH



Dr. Guerrini is a Ramon y Cajal Researcher at the Universitat Rovira I Virgili, Tarragona (Spain). He earned his Master Degree cum laude in Industrial Chemistry from the Università deli Studi di Bologna (Italy). In 2009, he received his Ph.D. in physical chemistry from the Universidad Autónoma de Madrid (Spain). As a junior post-doc, he joined for two years the University of Strathclyde (Glasgow, UK). In late 2012, he was awarded a Marie Curie Intra-European Fellowship at the Universitat Rovira I Virgili (Tarragona, Spain) and, later on, he was employed as the Deputy Scientific Director of Medcom Advance SA, a start-up dedicated to the design and development of nano-optical devices for biomedical applications. In 2017, he received a TECNIOspring grant and, subsequently, he was awarded a Ramon y Cajal contract at the Universitat Rovira I Virgili. His current scientific interests are mainly focused on the area of optical nanosensing, including: (i) the design and fabrication of highly sensitive plasmonic nanoconstructs and their integration into advanced “all optical” devices for biosensing and environmental monitoring, (ii) use of optical technologies, mainly surface-enhanced Raman spectroscopy (SERS), as unique tools to address basic questions in biology, catalysis and material science.