ICMUV
INSTITUT DE CIÈNCIA DELS MATERIALS de la Universitat de València

VNIVERSITAT DE VALÈNCIA

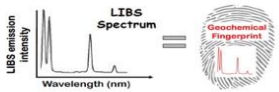
ISTP Istituto per la Scienza e Tecnologia dei Plasmi
Consiglio Nazionale delle Ricerche

CONFERENCE

WEDNESDAY 25th OF FEBRUARY at 12.00pm

SEMINARIO SS6 / https://uv-es.zoom.us/j/97204125655

Institut de Ciència dels Materials de l´Universitat de València (ICMUV). Catedrático José Beltrán 2, Paterna



A 21st century analytical tool for geosciences, environmental systems, and cultural heritage: Laser-Induced Breakdown Spectroscopy

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Since the turn of the century, laser-induced breakdown spectroscopy (LIBS) technology has rapidly progressed from bespoke apparatus to commercial laboratory instruments and to systems for industrial analysis. Recently, portable and then handheld spectrometers to achieve in-situ, real-time chemical analysis have been developed, being even deployed on extraterrestrial Mars rovers.

LIBS is a simple, straightforward, and highly versatile analytical technique that focuses a rapidly pulsed laser beam onto a sample to yield a plasma containing its constituent elements and then uses spectral analysis of emitted light to determine the material chemical composition. LIBS can be used for the rapid and simultaneous multi-element analysis of different types of geological media – solid (rocks, minerals, soils), liquid (waters, brines, hydrothermal fluids), or gas (ambient atmosphere, geogenic emissions) and it is capable of qualitative, semiquantitative, and quantitative analysis of all elements in the periodic table, being able also to perform rapid microscale compositional mapping.

In this presentation the LIBS technique will be described, and LIBS applications to the analysis of rocks, soils, meteorites and cultural heritage discussed and illustrated based on personal works.

***Dr. Giorgio S. Senesi** is a geologist and senior researcher at the Italian National Council Research and Institute for Plasma Science and Technology in Bari, Italy. He holds a BA/MS in Vulcanology and PhD in Earth Sciences from University of Bari. He has been a Post-Doctoral Fellow at the Department of Plant and Soil Sciences at the University of Delaware in Newark in the USA and a researcher at the Centro Laser of Valenzano in Bari. He is co-editor of the 2023 book African Meteorites by Bentham Books. He holds an Honorary Membership of the University Museum of Meteorites in Morocco. Dr. Senesi has long-established technical cooperation with Embrapa Instrumentation of Brazil and research collaborations with the Federal University of Mato Grosso do Sul, Sao Paulo State University, North Carolina State University, Tianjin University, and University of Florence. https://orcid.org/0000-0002-3947-6853*