



UNIVERSITÀ
di VERONA

Dipartimento
di BIOTECNOLOGIE

Dipartimento
di INGEGNERIA PER LA MEDICINA
DI INNOVAZIONE

Seminar

16th May - 11.30

Ca' Vignal 2, Lecture Hall "I"

Prof. Eva Hemmer

Department of Chemistry and Biomolecular Sciences
University of Ottawa, Canada

Hot off the Microwave: Structure-Property Control in Lanthanide-based Nanomaterials

The remarkable optical properties of the lanthanides (Ln) make Ln-based nanoparticles (Ln-NPs) ideal for applications, from biomedicine to optomagnetic technologies. This is due to the electronic properties of the Ln³⁺ ions allowing for upconversion, i.e., the emission of UV-visible light under excitation with near-infrared (NIR) light. Additionally, some Ln-NPs emit NIR light under NIR excitation, operating in the so-called NIR transparency window, endowing them with potential for biomedical applications. Certain Ln exhibit exciting magnetic properties allowing their use as MRI contrast agents or single-molecule magnets (SMMs). Sodium lanthanide fluorides (NaLnF₄) are our favorite materials, and our developed microwave-assisted synthesis enables crystalline phase and size control (3-20 nm). Having a reliable synthetic route towards NaLnF₄ NPs on hand, we explore various architectures and compositions with the goal to optimize their properties for application from optomagnetic imaging probes and luminescent thermal sensors to the first demonstration of NaLnF₄ NPs acting as SMM. This talk will shed light on the microwave-assisted synthesis of Ln-NPs, composed of NaLnF₄ and beyond, with a focus on structure-property control.

You are strongly invited to participate!

Francesco Enrichi

Optical and Vibrational Spectroscopy Lab

Department of Engineering for Innovation Medicine, University of Verona,

Tel. +39 045 802 7051; Mobile: +39 349 3206604

Adolfo Speghini

NRG - Department of Biotechnology, University of Verona

Office: +39 045 8027900; Mobile: +39320 4375978

<http://www.adolfospeghini.it>



Dipartimento di Biotecnologie

Ca' Vignal 1, Strada Le Grazie 15 - 37134 Verona, Italia
T +39 045 8027933 | segreteria-dbt@ateneo.univr.it
P. IVA 01541040232 | C.F. 93009870234

Dip. di Ingegneria per la Medicina di Innovazione

Ca' Vignal 2, Strada le Grazie 15 - 37134 Verona
T +39 045 802 7010 | segreteria.dimi@ateneo.univr.it
P. IVA 01541040232 | C.F. 93009870234