



Séminaire externe

Mardi 30 janvier 2018 à 11h00

Salle de conférence du CBM

Shedding Light on Luminescent Nanothermometry

Luminescent ratiometric thermometers combining high spatial and temporal resolution at the micro and nanoscale, where the conventional methods are ineffective, have emerged over the last decade as an effervescent field of research, essentially motivated by their potential applications in nanotechnology, photonics and biomedicine [1]. Among the distinct luminescent thermal probes, trivalent lanthanide (Ln^{3+})-based materials play a central role in the field due to their unique thermometric response and intriguing emission features (e.g., high quantum yield, narrow bandwidth, long-lived emission, large Stokes shifts, and ligand-dependent luminescence sensitization).

One of the main challenge that is currently facing scientists in the field is to use luminescent thermometry for unveiling thermometers' local surrounding properties, as, for instance, the heat transfer in heater-thermometer nano-platforms [2], the absorption coefficient and thermal diffusivity of tissues in small animals [3], the instantaneous ballistic velocity of Brownian nanocrystals suspended in both aqueous and organic solvents [4], and the thermal conductivity of mesoporous nanostructures [5].

This seminar presents a general revision of the work done in the last couple of years on ratiometric luminescent nanothermometers and heater-thermometer nano-platforms with emphasis on biomedical examples.

Pr Luis D. CARLOS

Departamento de Fisica

and CICECO-Aveiro Intitute of Materials

Universit  de Aveiro, Portugal



Invit  par St phane Petoud et Svetlana Eliseeva

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