CICLO DE SEMINARIOS 2021-2022
DEPARTAMENTO DE QUÍMICA FÍSICA
UNIVERSIDAD COMPLUTENSE DE MADRID

Miércoles 23 de febrero de 2022 – 11:30 h
Aula QC16

Intracellular temperature measurements using anisotropy-based nanothermometers

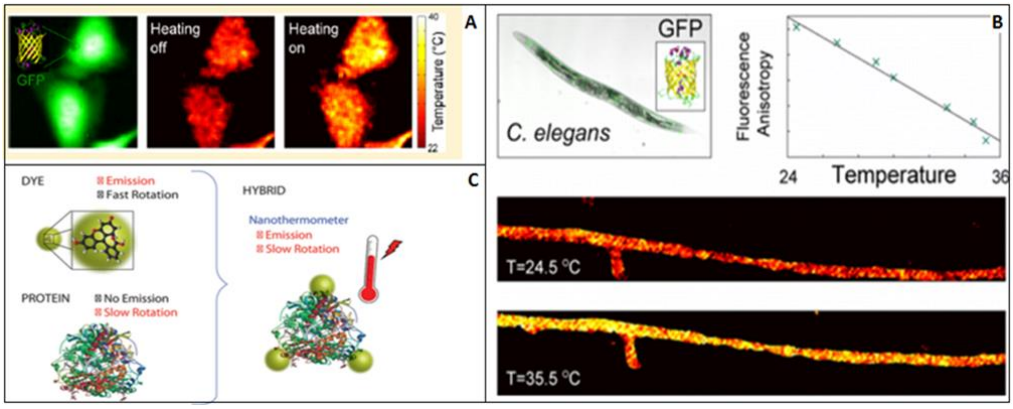
Dr. Sebastián Thompson

IMDEA Nanociencia

Thompson-lab.net

sebastian.thompson@imdea.org

Temperature is a crucial parameter in biology, medicine, and physics. Because of that, in the last years, several methods have been developed and presented to measure nanoscale temperature. Optical methods excel because they are non-invasive, spatially accurate, and can measure real-time local changes in temperature. Among these, fluorescence anisotropy-based methods are particularly advantageous because they are less affected by changes in the probe concentration and irradiation conditions. This seminar will present intracellular temperature measurements in cancer cells and live organisms using the green fluorescent protein (1, 2) and the theoretical and practical method to add thermosensitivity to any protein and DNA (3-5). In addition, it will also discuss the measurements of the organelle-oriented intracellular temperature of cancer cells for cancer diagnostic and treatment. Using these nanothermometers by a broad spectrum of disciplines within the scientific community will bring new knowledge and understanding that today remains unavailable with current techniques.



(1) Mapping intracellular temperature using green fluorescent protein SA Thompson *et al.*, Nano letters 12 (4), 2012
(2) Imaging of plasmonic heating in a living organism SA Thompson *et al.*, ACS nano 7 (10), 2013
(3) Plug and Play Anisotropy-Based Nanothermometers SA Thompson, *et al.* ACS Photonics 5 (7), 2018
(4) Universal guidelines for the conversion of proteins and dyes into functional nanothermometers G Spicer *et al.*, Journal of biophotonics 2019
(5) Harresing DNA for nanothermometry. G Spicer *et al.*, Journal of biophotonics 2021

Se ruega enviar un correo a smarggi@ucm.es si se está interesado en acceder vía telemática.