

Thursday, 4th December, 12.00 pm, Seminar Room

Host: Prof. Luis M. Liz-Marzán

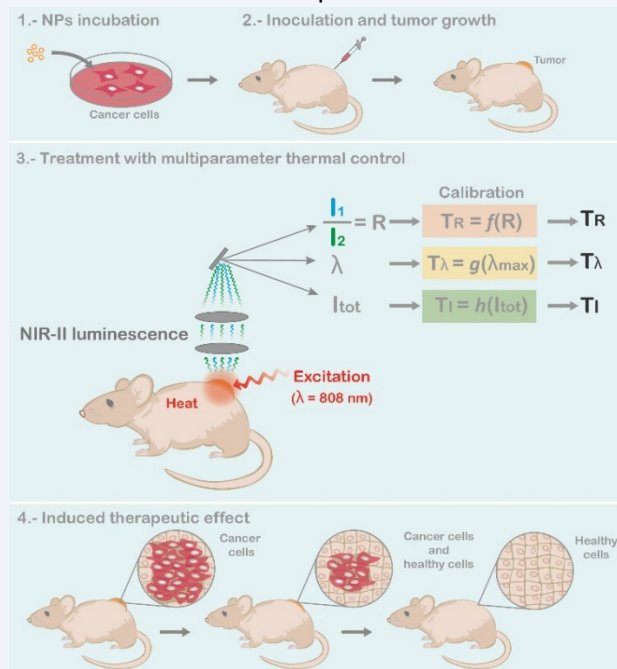
In vivo therapy and diagnosis by infrared luminescent nanothermometers

Daniel Jaque

1 Fluorescence Imaging Group, Departamento de Física de Materiales, Facultad de Ciencias, Universidad Autónoma de Madrid, 28049 Madrid, Spain

2 Instituto Ramón y Cajal de Investigación Sanitaria. Ctra. Colmenar Viejo, km. 9100 28034 Madrid

Over the last few years, the scientific community has witnessed a remarkable advance in the design, synthesis, and implementation of luminescent nanoparticles for bio-imaging and bio-sensing applications. Some of the old, unrealizable dreams have become possible thanks to the appearance into scene of novel advanced materials with never before imagined properties. This is the case of luminescent nanothermometers, nanoparticles capable of provide a contactless thermal reading through their light emission properties. Luminescent nanothermometers have made possible to measure intracellular temperature.



beam in vivo hyperthermia treatment of cancer tumors.

In this talk we will summarize the latest results at the *in vivo* level obtained by using luminescent nanothermometers as both imaging and diagnosis probes. Furthermore, the use of luminescent nanothermometers in novel, accurate and minimally invasive therapies will be also discussed. We will fully demonstrate the potential of luminescent nanothermometers as new multifunctional thermal probes without competition to lead a new era of biomedicine founded on thermal imaging based diagnosis and therapies.

Figure shows an schematic representation of the attest advances in the field. It demonstrates how a single luminescent nanoparticle can act in simultaneous way as a luminescent nanothermometer and nanoheater being capable of multi-parameter (accurate) intratumoral thermal reading during a single