UNIVERSIDAD POLITÉCNICA DE MADRID

UPM INTERNATIONAL SUMMER SCHOOL ANGLOTECH

NANOTECHNOLOGY

The course offers an introduction to the foundations of nanotechnology, the properties of nanostructures, and the most usual tools for their fabrication and characterization, and also the development of different nanodevices and nanosystems, especially in the areas of nanoelectronics, nanophotonics and nanobiotechnology.

Course duration: 20 contact hours

Dates: 19 to 23 June 2023

Background knowledge:

- Students should have basic knowledge of material science and physics

LEARNING OUTCOMES

Understand

New properties

Nano-size

Understand interdisciplinarity

Basis

Nanotechnology

Learn

Nanotechnology approaches

Fabrication and characterization

Get acquainted

Main nanomaterials

Fabrication and characterization

Discover

Advanced nanotechniques

Fabrication and characterization

Discover

Nanodevices

Socioeconomic impact

Visit

IS04 Clean Room

Practical experience

SYLLABUS

MODULES

01

I. Introduction to Nanotechnology: principles, size, scaling down, application overview; global impact
II. Nanomaterials (semiconductors, carbon-based nanostructures, biomaterials)
III. Nanotechniques for fabrication and characterization

02

I. Some nanodevices: nanoelectronics, nanophotonics, nanobiotechnology
II. Industry talk: Industrial and social impact of nanotechnologies
III. Question & answer session

03

I. ISOM-UPM lab tour
II. Fabrication practices (parallel sessions with two subgroups)

Meet Our

INSTRUCTORS

Fernando Calle is full professor of electronics and nanotechnology, currently leading the Institute for Optolectronic Systems and Microtechnology. He has been the principal investigator of 35+ R&D projects, coauthor of 200+ international publications, 50+ invited talks and five patents. His current research is related to the physics, technology, and applications of wide bandgap semiconductors and 2D materials.

Pedro Serena was the coordinator of Spanish National Research Coordinator for the Madrid Region, as well as Director of the Center for Theoretical Physics and Mathematics. His research is related to modeling and studying electronic and mechanical properties of several nanostructures. He has authored 90 scientific papers and 60+ papers on scientific dissemination and policy, and has contributed to doctoral and master courses.

Manuel Albuín is head of the clean room and member of the Magnetic Devices Group at the Institute for Optoelectronics Systems and Microtechnology.