

## **Advanced topics in nanomaterials**

**Description:** This course will review the optical properties of nanoscale metallic and semiconductor particles. The focus of the course will be the understanding of the Physics of surface plasmons in metallic nanoparticles, and excitons in semiconductor quantum dots.

### **Outline:**

- Basics of electromagnetism. Optical response.
- Surface plasmon polaritons.
- Localised surface plasmons in metal nanoparticles.
- Semiconductor quantum dots.
- Near-field nanoscopy for material characterization.
- Photonic crystals.

**Teachers:** Javier Aizpurua and Rainer Hillenbrand.