



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

UAB
Universitat Autònoma
de Barcelona

 UNIVERSITAT DE
BARCELONA

ICFO
The Institute
of Photonic
Sciences



Master in Photonics – “PHOTONICS BCN” Master ERASMUS Mundus “EuroPhotonics”

MASTER THESIS PROPOSAL

Dates: April 2021 - September 2022

Laboratory: Institute of Materials Science of Barcelona ICMAB - CSIC

Institution: CSIC

City, Country: Barcelona, Spain

Title of the master thesis: Optical properties of scalable metal dimer arrays

Name of the master thesis supervisor and co-supervisor:

Agustín Mihi

Email address: amihi@icmab.es

Phone number:

Mail address: Campus UAB, 08193 bellaterra, Barcelona

Keywords:

Plasmonics, nanofabrication, spectroscopy

Summary of the subject (maximum 1 page):

In our group, we use scalable soft nanoimprinting techniques to fabricate plasmonic nanostructures compatible with emerging optoelectronic devices.

Plasmonic supercrystals are large area assemblies of metal nanoparticles from colloidal dispersions in large periodic geometry. The arrangement in a larger superstructure allows us to engineer the optical response of the film, and it has great potential for sensing, lighting and photovoltaics. (More info: **Acc. Mater. Res. 2021, 2, 9, 816–827**)

In this project we will aim at creating particle dimer arrays in a scalable manner. Metal dimers are an exciting plasmonic structure that sustain intense near fields in the gap between the particles with different uses for light matter interaction.

The candidate will combine a simple soft nanoimprinting fabrication procedure to nanostructure gold colloids into arrays and perform the optical characterization of the samples. also available is a FDTD software to model and gain insight in the optical properties explored.

Additional information (if needed):

* Website: <https://enlightment.icmab.es/>