Rubén Miranda Carreño
Dpt. Chemical and Materials Engineering
Universidad Complutense de Madrid

Research lines/Activities

- Industrial wastewater treatment.
- Waste valorization.
- Sustainable industrial processes.
- Circular economy.
- Paper recycling.
- Sustainable Development.

- *Food waste valorization for high added value products.*

Who are we?

At present, it’s only me, collaborating with different research groups:

- Catalysis and Separation Process (Faculty of Chemistry, UCM)
- TECNOLANIMA – Food Technology (Faculty of Veterinary, UCM).

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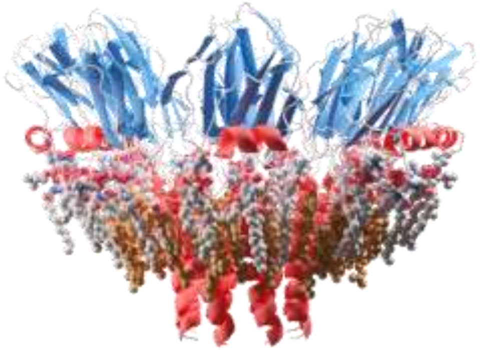
Group of Toxic Proteins
Universidad Complutense de Madrid / Faculty of Chemistry

Research lines/Activities

- Structure-function studies of toxic pore-forming proteins (PFPs) from the venom of sea anemones, with a particular focus on their interactions with lipids.
- Engineering these PFPs for biotechnological applications, such as the degradation of plastic nanoparticles.



Three-dimensional structure of StnII pore in a nanodisc (not shown). Protein appears in blue and red and lipids in white and sand.

Who are we?

- Sara García Linares (Associate Professor) sglinares@ucm.es

- Álvaro Martínez del Pozo (Full Professor) alvaromp@ucm.es

- Javier Maraver de Paz (PhD student) jamarave@ucm.es

Physical NanoChemistry Group

School of Chemical Sciences

Universidad Complutense de Madrid (UCM), Spain

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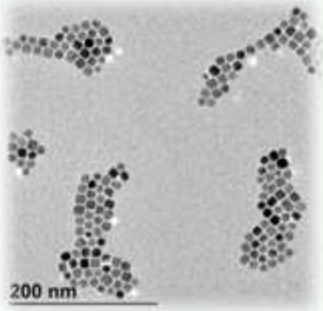
Research lines



On-demand synthesis:

- Metallic nanoparticles
- Metal oxide nanoparticles
- Lipid nanoparticles

Characterization

-Using chemical-physical techniques: TEM, DLS, optical methods, SQUID/portable inductive magnetometers

Dark Field Microscopy

-As a tool for detection

We are interested in Nanomedicine:

-Responsive materials

-Chemical and biochemical sensors

-Thermal therapy against cancer

-Gene therapy and new vaccines

Who we are

Our research group:

Mª José Mancheño
José Osío
Elena Junquera
Andrés Guerrero

Guillermo González
Helena Gavilán
Mónica Muñoz
Lucía Labrador
Rubén Ahijado

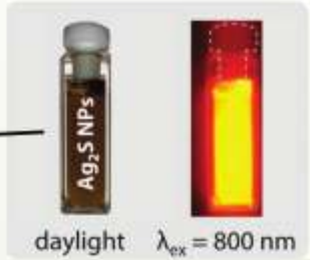
Ren Xu
Fernando Martín
Sergio Triviño
Alfredo Casasnovas
Marco Cuenca

una europa

MatNaBio Group, School of Pharmacy
Universidad Complutense de Madrid, Spain

Research lines

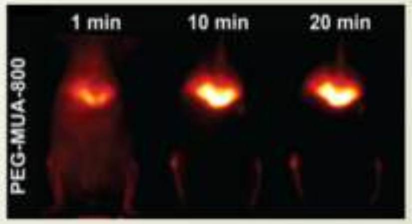
Development of materials and sensors for the continuous detection of biological molecules of interest.



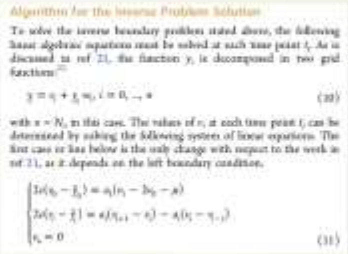
Material development:
luminescent nanoparticles

Experimental:
optics and device prototyping
(electronics, 3D printing)

In vivo testing:
cell culture, animal studies



Modeling


Algorithm for the Inverse Problem Solution

To solve the inverse boundary problem stated above, the following linear algebraic equations must be solved at each time point t_j. As is discussed in ref 21, the function y_i is decomposed in two grid functions:[21]

[illegible] (30)

with $n = N_x$ in this case. The values of v_i at each time point t_j can be determined by solving the following system of linear equations. The first case or line below is the only change with respect to the work in ref 21, as it depends on the left boundary condition.

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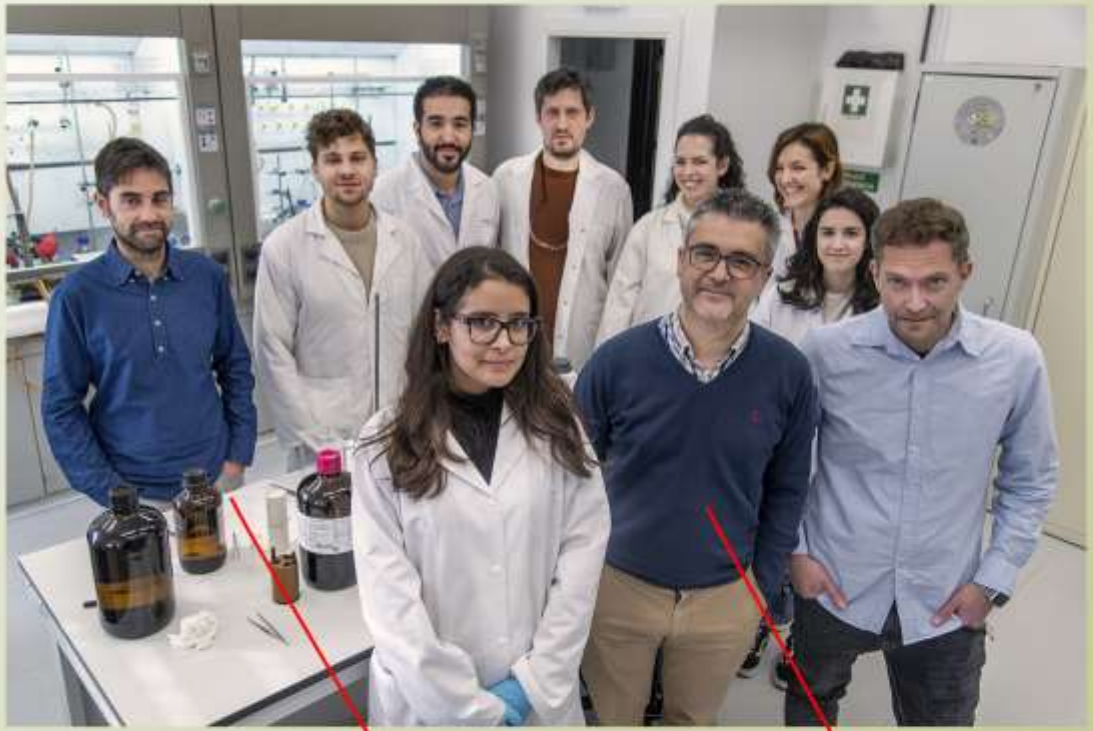
Who we are

Multidisciplinary team:
pharmacists, chemists, physicists



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Research background

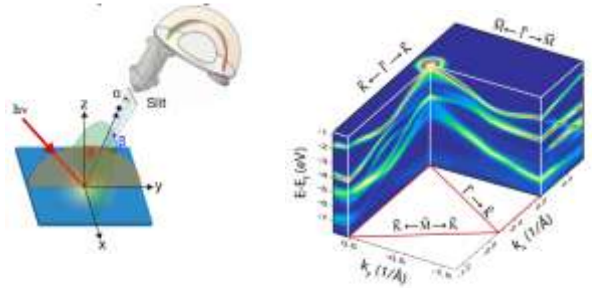
Experimental physicist
Surface Science

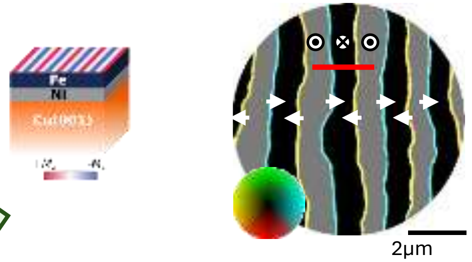
- Low dimensional Systems
- Nanomaterials
- Electronic structure
- Nanomagnetism

Main experimental techniques

Angel Resolved Photoemission Spectroscopy ARPES

Low Energy Electron Microscopy LEEM-PEEM-SPLEEM (with magnetic resolution)





Synchrotron Radiation Large Facilities

Tunable light

Other related techniques/ experience XAS, XPS, XRD

Sample “requirements”

Atomically clean and well-ordered samples (nanocrystals, ultra thin films)
“Conductive” samples
Ultra-high vacuum environment

2D materials: MoS_2
Synthetic anti/ferri magnets: Fe/Gd
Permanent magnets without rear earths elements (hexaferrites)
Complex oxides: $LiCoO_3$, $NdNiO_3$, $SmCoO_3$