

Data-Driven Approach for Accelerating Pulsed Plasmonic Catalysis

Centro de Física de Materiales (CSIC-UPV/EHU), Donostia/San Sebastián, Spain

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Center for Materials Physics offers a fully-funded PhD position (4 years) to work in the context of a research project titled *Data-Driven Approach for Accelerating Pulsed Plasmonic Catalysis* (Grant: PID2022-141017OB-I00).

Requirements for the position: The offered position requires experience in nanochemistry and basic knowledge of machine learning and programming skills in Python. Candidates should hold a Master's degree (or equivalent) in one of the following fields: Chemistry, Engineering, Physics, Nanotechnology, or Material Science. Excellent written and verbal communication skills in English are a must.

Host Group: The selected candidate will join an interdisciplinary and multinational research group, Nanomaterials and Spectroscopy / CoISysChem (<https://colsyschem.github.io>), at CFM.

Training: The student will enroll in the Doctoral Programme in Physics of Nanostructures and Advanced Materials at the University of Basque Country (<https://www.ehu.eus/en/web/doktoregoa/doctorate-physics-nanostructures-advanced-materials>). The student will obtain full access to the entire infrastructure of the group and receive theoretical and practical training on the use of each instrumentation available in the group. The researchers in our group covering a whole knowledge value chain from the synthesis of nanoparticles, self-assembly, biosensing, and advanced optical characterization will be involved in training activities. The student will participate in Software Carpentry Workshop at the CFM to gain knowledge in Python programming language for data analysis. Also, she/he will participate in soft skills courses organized annually at Donostia International Physics Center to improve her skills in science communication and scientific writing. The student will also participate in CFM outreach activities.

To ensure the international certificate of the Ph.D. thesis, the student will execute a three-month stay in a high-profile research group specialized in plasmonic catalysis and thermoplasmonics.

Recent articles related to the PREST project:

1. Mezzasalma, S. A. et al.; Light-Driven Self-Oscillation of Thermoplasmonic Nanocolloids. *Adv. Mater.* 2023, 2302987
2. Kruse, J.; et al.; Coupling Reversible Clustering of DNA-Coated Gold Nanoparticles with Chemothermal Cycloaddition Reaction. *ChemSysChem* 2023, 5 (2), e202200031
3. Rogolino, A, et al.; Metal–Polymer Heterojunction in Colloidal-Phase Plasmonic Catalysis. *J. Phys. Chem. Lett.* 2022, 13, 2264–2272
4. Sánchez-Iglesias, et al.; Coupling Plasmonic Catalysis and Nanocrystals Growth through Cyclic Regeneration of NADH. *Nanoscale* 2021, 13, 15188–15192