



Postdoctoral position in plasmonic photocatalysis for asymmetric reactivity

Context

Even though the use of light as an energy source is well established in photocatalysis, its implementation in heterogeneous asymmetric reactivity is still scarce. Therefore, there is an urgent need to find new strategies to drive efficient asymmetric photochemical reactions with solar radiation. In this project we propose to combine the unique features of plasmonic metal nanoparticles as photocatalysts[1] with asymmetric reactivity, aiming at performing heterogeneous and asymmetric photocatalytic reactions solely driven by plasmons.[2] Different chiral plasmonic systems with chiroptical responses at different energy scales (from the UV to the NIR) will be used as starting materials.[3,4] These highly versatile plasmonic systems will be implemented to explore asymmetric reactivity both for organic and inorganic transformations.

Activities

The postdoctoral fellow will be in charge of running photochemical reactions using different plasmonic nanomaterials synthesized by our partners in Bordeaux and Strasbourg as heterogeneous catalysts. In parallel, he/she will also contribute to the colloidal synthesis of chiral plasmonic resonators. Transmission and scanning electron microscopy and different spectroscopies will be routinely used for the characterization of the materials. Moreover, GCMS and other chromatographic techniques will be implemented to monitor the photochemical reactions under study.

Competences

PhD in Chemistry, Nanotechnology or Materials Science. Experience in the colloidal synthesis of inorganic nanocrystals and/or heterogeneous catalysis will be highly valued. Proficiency in English is expected.

Location

The postdoctoral researcher will work at ITODYS laboratory in Paris. The position is funded by a national ANR project. Therefore, strong interactions with other partners of the consortium in Bordeaux and Strasbourg will be particularly important.

Starting date: September 2024 (negotiable).

Duration: 2 years (1+1)

Gross salary: 2500-3200 €/month depending on experience.

Applications: Motivation letter, CV with a complete list of publications and 2 contact references should be sent to Miguel Comesaña (miguel.comesana-hermo@u-paris.fr).

References

[1] Brissaud et al., Solar RRL, 2023, 7, 2300195

[2] Negrín-Montecelo et al., J. Am. Chem. Soc., 2022, 144, 4, 1663

[3] Gao et al., ACS Nano, 2020, 14, 4, 4111

[4] Wu et al., Nano Lett., 2021, 21, 19, 8298