

Post-Doctoral Position in Ultrafast Transient Spectroscopy :

Light Harvesting and Charge Separation in Solid Photocatalysts

LASIRE - Laboratoire de Spectroscopie pour les Interactions, la Réactivité et l'Environnement

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Project overview This project aims to optimize the light-to-chemical energy conversion processes in porous and nanostructured catalysts for the photo(electro)chemical conversion of CO_2 into high-value chemicals and solar fuels. The challenge is to uncover and exploit the synergy between the ultrafast photodynamics, the composition and the topology of the materials for enhanced photocatalytic performances.

Your Mission In the framework of the SYNFLUX-LUMICALS PEPR LUMA consortium, you will investigate by using time-resolved spectroscopy experiments novel catalysts developed by our partners IRCELYON and UCCS. Your goal will be to describe the ultrafast processes of charge generation and separation, and to contribute to the strategy of design of these materials.

Scientific and Collaborative Environment The PCS team at LASIRE focuses its research in ultrafast transient spectroscopy of photoactive materials and supramolecular assemblies and it is in charge of the development and exploitation of the **Ultrafast Laser Facility** of the Institut Chevreul. The selected candidate will benefit of an interdisciplinary consortium and will engage direct and continuous collaboration with partner chemistry teams, fostering a stimulating environment that combines technical expertise and scientific cooperation.

Candidate Profile The ideal candidates hold a PhD in Physical Chemistry, with a strong background in optics, lasers, spectroscopy, and materials science. They should have proven experience in using advanced instrumental environments and optical spectroscopic techniques, as well as the interest to study complex chemical materials and supramolecular architectures.

Required Skills and Expertise

- Proficiency in optical and femtosecond time-resolved spectroscopy
- Experiences in instrumental and methodological development.
- Familiarity with *in situ* solid-state spectroscopy and characterization of porous/nanostructured solid materials.
- Strong academic formation with credits in light-matter interaction, photophysical and photochemical processes in materials, laser and optics, solid state properties, characterization and reactivity.
- Ability to work in an interdisciplinary team and collaborate with chemists and material scientists.
- Strong analytical, problem-solving, and communication skills (written and oral).

Contract Details Duration : 18 month, Salary : Between €3,000 and €3,500 gross per month, according to the experience.

References :

1. Q. Perrinet et al. Journal of Physical Chemistry C, **2025**, 129 (2), pp.1313-1326. [⟨10.1021/acs.jpcc.4c07100⟩](#). [⟨hal-04882724⟩](#)
2. L. Duploup et al. The European Physical Journal. Special Topics. **2023**, 232 (13), pp.2145-2156. [⟨10.1140/epjs/s11734-023-00813-9⟩](#). [⟨hal-04295919⟩](#)
3. F. Wisser et al. Angewandte Chemie International Edition, **2020**, 132 (13), pp.5154-5160. [⟨10.1002/anie.201912883⟩](#). [⟨hal-02892502⟩](#)
4. G. Fang et al. Nat Commun **2026**. [⟨10.1038/s41467-026-72422-8⟩](#)
5. PCA-Ultrafast Laser Facility : <https://pca.univ-lille.fr/poles/spectroscopie-ultra-rapide>16548