



Post-doctoral position at the DESIRS VUV beamline of Synchrotron SOLEIL and at ISMO: Photoelectron Circular Dichroism (PECD) from static to nanosecond down to femtosecond time-resolved approaches

Within a national networking program on multi-scale/multi-dimensional approaches of chirality called [TORNADO](#), gathering 13 teams in France, a 30 month-long post-doctoral research position is open, starting from April 2025 in the [VUV beamline DESIRS group](#) (led by Laurent Nahon) at Synchrotron SOLEIL. The candidate will be co-supervised by the [CHIPIE group](#) (led by Anne Zehnacker) at ISMO (Paris-Saclay University), located 2 km away so that he/she will be embedded in both groups.

The position is centered around PECD, a very intense chiroptical effect, observed as a forward/backward asymmetry in the Circularly Polarized Light-ionization of isolated chiral species. PECD is known to be very sensitive to static and dynamic molecular structures like isomers, conformers and clusters (for reviews see [1,2]), as such perfectly suited to static as well as time-resolved pump/probe approaches to explore chiral structures and dynamics. A recently established collaboration between the DESIRS and ISMO teams, allowed bridging pioneering synchrotron and laser-based methods to explore some of the chemical dimensions of chirality (conformations and chiral complexes)[3-5].

In this collaborative context, and within the broader framework of TORNADO, the candidate will study static one-photon PECD (at DESIRS) and two-photon PECD at ISMO. Special emphasis will be put on systems whose electronic excited state dynamics can be probed by time-resolved multiphoton PECD on the ns timescale (at ISMO), and fs timescales (in collaboration with the HXUV group at CELIA/Bordeaux). We will be especially focusing on chiral complexes as well as axial chirality systems taking advantage of the exquisite sensitivity of the PECD observable to molecular structures. A second axis of research will be devoted to helical supra-molecular chirality, via static one-photon PECD on DESIRS, from small isolated species up to large chiral nano-objects, both custom-synthesized by chemists within the TORNADO network.

The contract is for 1.5 years extendable for one year upon mutual agreement. Knowledge of French is not mandatory, but a fluent level of spoken and written English is required.

The candidate is expected to hold a PhD in Physical Chemistry or Physics or Chemistry, since no more than 3 years. A solid background in gas phase molecular dynamics/spectroscopy is required, as well as experience in electron and/or ion mass spectrometry associated with molecular/effusive beams. Previous expertise on chirality, synchrotron radiation/laser systems or charged particle detection specially through imaging techniques is not mandatory but will be positively considered.

Motivated candidates should contact by e-mail Laurent Nahon (laurent.nahon@synchrotron-soleil.fr) and Anne Zehnacker (anne.zehnacker-rentien@cns.fr) providing a cover/motivation letter, CV and list of publications and contact details of at least two referees before December 15th 2024. Shortlisted candidates will be interviewed, online, in January 2025.

- [1] L. Nahon et al., J. Elec. Spectrosc. Relat. Phenom. **204**, 322 (2015).
- [2] R. Hadidi et al., Advances in Physics: X **3**, 1477530 (2018).
- [3] J. Dupont et al., J. Phys. Chem. Lett. **13**, 2313 (2022).
- [4] E. Rouquet et al., Nat. Commun. **14**, 6290 (2023).
- [5] E. Rouquet et al., Angew. Chem. Int. Ed. Engl., e202401423 (2024).