

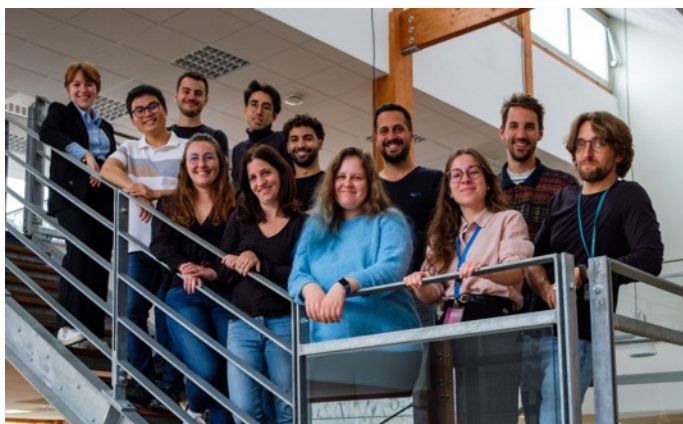
ERC-funded Postdoctoral positions at CRMN Lyon

Pulsed-DNP with Hyperpolarizing Matrices

A **postdoctoral position** is available working in the group of Prof. Sami Jannin (hmrlab.eu) on a project funded by the European Research Council, at the Very High Fields NMR Center (crm-n-lyon.fr) in the city of Lyon, France.

Profile. We are seeking candidates with a Ph.D. in Chemistry or Physics who enjoy synergistic teamwork.
Skills required in development in pulsed EPR and/or DNP.

Project Description. The HypFlow project aims at developing replenishable hyperpolarization by rapid-cycle DNP (3M€ ERC CoG HypFlow). In this new DNP approach, samples are repeatedly polarized in silica or epoxy-based hyperpolarizing matrices, melted, and flowed towards a benchtop NMR system within a closed loop to repeat the experiment. This hyperpolarization method neither involves contamination nor dilution and is meant to be broadly compatible with conventional multidimensional liquid-state NMR. We have already demonstrated rapid ^1H and ^{13}C enhancements of up to 400 in less than a second with our polarizer. In February 2024, we received a pulsed EPR/DNP system. This will enable us to push the enhancement limits by using new generations of hyperpolarizing matrices with hyperpolarized electron spin states.



The selected candidate will in particular:

- Implement existing pulsed DNP sequences and perform experiments with available hyperpolarizing matrices (HYPSOs, HYPOPs).
- Explore new generations of hyperpolarizing matrices (using photoexcited triplet states and/or chiral-induced spin selection).
- Participate in the modification of the existing ^1H NMR probe for ^{13}C CP.
- Couple the pulsed DNP system with a rapid melt and flow system.
- Have the opportunity to co-supervise PhD students.

Facilities. The Center for Very High Field NMR is one of the world's leading magnetic resonance laboratories, located in the great city of Lyon, which is affiliated with the Lyon-1 University, the CNRS (French National Center for Scientific Research) and the Ecole Normale Supérieure de Lyon. The center has state-of-the-art NMR spectrometers (500 - 700 - 800 MHz, and the world's first 1 GHz spectrometer) and two state-of-the-art dissolution-DNP machines.

Contract. Flexible starting date, up to 4-year secured funding, including healthcare and other benefits (net income commensurate with experience).

How to apply. Get directly in touch with sami.jannin@univ-lyon1.fr for further details on the position and submit your application via e-mail including a brief statement explaining your background and motivation, your CV, and optionally contact information of 2 references.

Recent publications. Google Scholar [link](#).

Bocquet, C. *et al.* [ChemRxiv \(2024\)](#)

Stern, Q. *et al.* [J. Am. Chem. Soc. 145, 27576–27586 \(2023\)](#)

Elliott, S. J. *et al.* [J. Magn. Reson. Open 10–11, 1–12 \(2022\)](#)

El Darai, T. *et al.* [Nat. Commun. 12, 1–9 \(2021\)](#)

Ceillier, M. *et al.* [J. Magn. Reson. Open 8–9, 1–10 \(2021\)](#)

Stern, Q. *et al.* [Sci. Adv. 7, eabf5735 \(2021\)](#)

Elliott, S. J. *et al.* [Prog. Nucl. Magn. Reson. Spectrosc. 126–127, 59–100 \(2021\)](#)