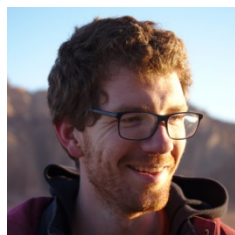


## CV – Samuel Cousin



Web of Science W=1899-2018

ORCID 0000-0002-7021-478X

Born 4th of October 1990 in France

Articles: 34

Reviews: 2

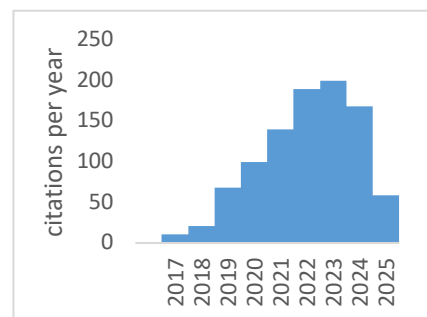
Patent: 1

Book Chapter: 1

Citations: 971

h-index: 16

i10-index: 24



## Education and Research

- 2022- **Permanent research position at CNRS – Section 16 → Section 18**  
Biom mineralization studied by MAS-DNP.  
Université d'Aix Marseille– ICR - SACS, Marseille, France
- 2021- **Postdoctoral research associate:**  
Crystallization studied by MAS-DNP.  
Giulia Mollica, Université d'Aix Marseille– ICR - SACS, Marseille, France
- 2018- **Postdoctoral research associate: Contrast Agents**
- 2020 Developing hyperpolarization methods, theory, and applications  
Sami Jannin, Centre de Résonance Magnétique à très haut champs – CRMN, Villeurbanne, France
- 2017 **Postdoctoral research associate: Clinical MRI**  
Reconstruction technics for spatially encoded MRI.  
Lucio Frydman, Weizmann Institute of Science – Rehovot, Israel
- 2013- **PhD in biophysics:**
- 2016 Two-field nuclear magnetic resonance: spectroscopy and relaxation.  
Fabien Ferrage, École Normale Supérieure de Paris, ENS, Paris, France
- 2010- **License and Master at the ENS Paris (étudiant Normalien)**
- 2013 Specialty in Organic Chemistry

## Supervision (Since 2022)

- PhD students - Minh Tu LY ( co-directeur) 2024 -
- Master - Tariq OUHSINE (50%) 2025
- Belma MUSTAFIC (100 %) 2023

## ANR

- MICRONMR PRC - Member, involved in the characterization by DNP NMR and analysis of spin diffusion in polymer matrices.
- SPIDI JCJC – under review

## Selected Scientific publications

### Biom mineralization

- **<sup>43</sup>Ca Freeze-quenched MAS-DNP for the characterization of transient phases involved in the non-classical formation of hydroxyapatite.** Georges T., Chèvre R., Guigner J.M., Cousin S.F., Gervais C., Thureau P., Mollica G., Azaïs T., under review
- **<sup>43</sup>Ca MAS-DNP NMR of Frozen Solutions for the Investigation of Calcium Ion Complexation.** Georges T., Chèvre R., Cousin S.F., Gervais C., Thureau P., Mollica G., Azaïs T., ACS Omega 9, 4881-4891

## Metabolomic

- **Micromolar Concentration Affinity Study on a Benchtop NMR Spectrometer with Secondary <sup>13</sup>C Labeled Hyperpolarized Ligands.** Cala O., Bocquelet C., Gioiosa C., Torres F., Thureau P., Cousin S.F., Guilbert S., Ceillier M., Busse V., Decker F., Kempf J.G., Elliott S.J., Stern Q., Bornet A., Jannin S., ACS Omega 10, 3332-3337
- **Fine optimization of a dissolution-DNP experimental setting for <sup>13</sup>C NMR of metabolic samples.** Day A., Charrier B., Lemaître K., Eshchenko D., Schnell M., Melzi R., Cousin S.F., Kempf J.G., Jannin S., Dumez J.-N., Giraudeau P., Magnetic Resonance Discussions 2022 – JMR Open, 2, 183-202.
- **Hyperpolarized NMR Metabolomics at Natural <sup>13</sup>C Abundance,** Dey A., Charrier B., Martineau E., Deborde C., Gandriaux E., Moing A., Jacob D., Eshchenko D., Schnell M., Melzi R., Kurzbach D., Ceillier M., Chappuis Q., Cousin S.F., Kempf J.G., Jannin S., Dumez J.N., Giraudeau P., Anal. Chem., 92, 22,14867-17871.

## Clinical MRI

- **Simultaneous Multi-banding and Multi-echo Phase Encoding for the Accelerated Acquisition of High-Resolution Volumetric Diffusivity Maps by Spatiotemporally Encoding MRI,** Lincgeng M., Otikovs M., Cousin S.F., Liberman G., Bao Q., Frydman L., MRI, 79:130-139.
- **A regularized reconstruction pipeline for high-definition diffusion MRI in challenging regions incorporating a per-shot image correction.** Cousin S.F., Gilad Liberman, Eddy Solomon, Martins Otikovs, Lucio Frydman, MRM,2019, Oct; 82(4):1322-1330.

## Chemical Physics

- **Direct observation of hyperpolarization breaking through the spin diffusion barrier,** Chappuis-Stern Q, Cousin S.F., Mentink-Viger F, Pinon A.C., Elliott S.J., Cala O., Jannin S., Science Adv., Vol 7 Issue 18.
- **Theoretical and Computational Framework for the Analysis of the Relaxation Properties of Arbitrary Spin Systems. Application to High-Resolution Relaxometry.** Bolik-Coulon N., Kaderavek P., Pelupessy P., Dumez J.N., Ferrage F., Cousin S.F.\*, Journal of Magnetic Resonance, 313, 106718.
- **Recovering Invisible Signals by Two-Field NMR Spectroscopy.** Cousin S.F. \*, Kadeřávek P.\*, Haddou B., Charlier C., Marquardsen T., Tyburn J.M., Bovier P.A., Engelke F., Maas W., Bodenhausen G., Pelupessy P., Ferrage F., Angew Chem int Ed Engl, 2016, 55, 9886-9889.

## Proteins Relaxation

- **Protein Dynamics from Accurate Low-Field Site-Specific Longitudinal and Transverse Nuclear Spin Relaxation** Kaderavek P., Bolik-Coulon N., Cousin S.F., Thorsten Marquardsen, Jean-Max Tyburn, Jean-Nicolas Dumez, Ferrage F., JPCL, 2019, 10,19,5917-5922.
- **Understanding the Methyl-TROSY effect over a wide range of magnetic fields.** Bolik-Coulon N., Cousin S.F., Kaderavek P., Dumez J.N., Ferrage F., JCP., 2019, 150, 224202.
- **Time-resolved protein side-chain motions unravelled by high-resolution relaxometry and molecular dynamics simulations.** Cousin S.F.\*, Kaderavek P.,\* Bolik-Coulon N.,\* Gu Y., Charlier C., Carlier L., Bruschweiler-Li L., Marquardsen T., Tyburn J.M., Bruschweiler R., Ferrage F., JACS., 2018, 41, 13456-13465.
- **Looped-PROjected Spectroscopy (L-PROSY): A simple approach to enhance backbone/sidechain cross-peaks in <sup>1</sup>H NMR.** Novakovic M., Cousin S.F., Jaroszewicz M., Rosenzweig R., Frydman L., JMR., 2018, 294, 169-180.
- **Determination of Protein ps-ns Motions by High-Resolution Relaxometry,** Cousin S.F., Kadeřávek P., Bolik-Coulon N., Ferrage F. n: Ghose R. (eds) Protein NMR. Methods in Molecular Biology, vol 1688. Humana Press, New York, NY.
- **Protein dynamics from nuclear magnetic relaxation.** Charlier C., Cousin S.F., Ferrage F., Chem. Soc. Rev., 2016, 45, 2410-2422.

## Conferences since 2022

- |                   |   |   |
|-------------------|---|---|
| Oral presentation | - | <b>GERM - 2025, Invited Speaker</b>                   |
|                   | - | <b>CRNS School on polymer – 2024, Invited Speaker</b> |
|                   | - | <b>GERM - 2023, Oral presentation</b>                 |