# Memoriu al activității științifice

## În timpul studiilor doctorale (2020–2026), am publicat următoarele articole/capitole de carte/studii de literatură în domeniul de studiu al tezei:

1. Sadet, A., Sarkar, R., Teleanu, F., Bodenhausen, G. & Vasos, P. R. Chapter 20: Long-lived Coherences. in *Long-lived Nuclear Spin Order* 371–388 (2020).

2. Teleanu, F., Sadet, A. & Vasos, P. R. Symmetry versus entropy: Long-lived states and coherences. *Progress in Nuclear Magnetic Resonance Spectroscopy* **122**, 63–75 (2021).

3. Teleanu, F., Tuță, C., Cucoanes, A., Vasilca, S. & Vasos, P. R. Magnetization Lifetimes Prediction and Measurements Using Long-Lived Spin States in Endogenous Molecules. *Molecules* **25**, 5495 (2020).

4. Teleanu, F., Topor, A., Serafin, D., Sadet, A. & Vasos, P. R. Rotating-Frame Overhauser Transfer via Long-Lived Coherences. *Symmetry* **13**, 1685 (2021).

5. Teleanu, F. & Vasos, P. R. Mechanisms of coherent re-arrangement for long-lived spin order. *Magnetic Resonance* **2**, 741–749 (2021).

6. Teleanu, F., Lupulescu, A. & Vasos, P. R. Selective Excitation of Long-Lived Nuclear Spin States. *J. Phys. Chem. Lett.* **13**, 6731–6736 (2022).

7. Teleanu, F. *et al.* Multiple Stroboscopic Detection of Long-Lived Nuclear Magnetization for Glutathione Oxidation Kinetics. *J. Phys. Chem. Lett.* 4247–4251 (2023)

8. Ianc, O., Teleanu, F., *et al.* Improved detection of magnetic interactions in proteins based on long-lived coherences. *Communications Chemistry* **7**, 1–7 (2024).

## Am publicat următoarele articole în domenii diferite de cel al tezei:

1. Moraru, I.-T., Teleanu, F. & Nemes, G. Theoretical Insights into the Structural Differences between Organic and Inorganic Amines/Ethers. *J. Phys. Chem. A* **124**, 8246–8253 (2020).

2. Moraru, I.-T., Teleanu, F., Silaghi-Dumitrescu, L. & Nemes, G. Offsets between hyperconjugations, p→d donations and Pauli repulsions impact the bonding of E–O–E systems. Case study on elements of Group 14. *Phys. Chem. Chem. Phys.* **24**, 13217–13228 (2022).

3. Lu, J, Teleanu, F., Conformational Landscape of NADH and Ion Binding in Water/DMSO Mixtures via 31P NMR Spectroscopy. *J. Phys. Chem. B* **128**, 8504–8511 (2024).

4. Gao, Z., Teleanu, F., Marr, K. A. & Jerschow, A. Molecular Shells and Range of Interactions in Ionic Liquids as a Function of Temperature. *J. Phys. Chem. Lett.* 2120–2127 (2025)

5. Li, Y., Teleanu, F. & Jerschow, A. Identifying intermolecular multiple-quantum coherences in ionic liquids. *Journal of Magnetic Resonance* **381**, 107984 (2025).

6. Fabricant, A. M., Picazo-Frutos, R., Teleanu, F. et al. Enabling nondestructive observation of electrolyte composition in batteries with ultralow-field nuclear magnetic resonance. *Chem. Sci.* https://doi.org/10.1039/D5SC04419G (2026)

## Am publicat următoarele brevete invenție:

1. Jerschow, A., Fabricant, A., Picazo-Frutos, R., Teleanu, F., Barskiy, D., Budker, D. Battery electrolyte characterization using ultralow-field NMR. (2025). WO2025245002A1

2. Aude, S., Teleanu, F. & Vasos, P. R. Metodă De Măsurare a Distanţelor Intramoleculare Sau Intermoleculare Folosind Rezonanţa Magnetică În Stare Lichidă Prin Tehnici Bazate Pe Coerenţe Cu Viaţă Lungă Ale Spinilor Nucleari. (2022).

## În timpul studiilor doctorale (2020–2026), am prezentat rezultatele cercetării din domeniul tezei la următoarele conferențe internaționale:

• European Conference on Magnetic Resonance (EUROMAR 2023), Glasgow, UK (9 – 13 July 2023)

Oral Presentation: Steady-state generation of long-lived nuclear spin states using cascades of pulses.

• European Conference on Magnetic Resonance (EUROMAR 2022), Utrecht, Netherlands (10 – 15 July 2022)

Poster: Selective Excitation of Long-lived Nuclear Spin States.

• Kazan Modern Development of Magnetic Resonance, Online (1 – 5 November 2021)

Poster: Rotating-frame Overhauser Enhancement using Long-lived Coherences.

• Zakopane Ampere NMR School, Online (21 – 23 June 2021)

Poster: Relaxation Dispersion Experiments Using Long-Lived Nuclear Spin Order.

Am prezentat rezultate diferite de cele din teza la următoarele conferențe internaționale:

• ACS Spring 2026 – Synergizing Crystallography and Spectroscopy: From Order to Dynamics (22 - 26 March 2026)

Oral Presentation (Digital): Studying electrolytes by NMR and MD simulations

• Global NMR Online Conference 2025, Online (16 - 18 July 2025)

2nd Prize: Ions dance, nuclei talk: understanding intermolecular Overhauser transfer in ionic liquids

• Gordon Research Seminar & Conference in Computational Aspects of Biomolecular NMR, Vaud, Switzerland (31 May - 6 June 2025)

Discussion Leader & FEBS Poster Award: Toward Understanding of Nuclear Spin Relaxation at Zero-to-Ultralow Fields

• ENC - ISMAR Joint Conference 2025, Asilomar, USA (6 - 10 April 2025)

Oral Presentation: In Situ Zero- and Ultralow-Field (ZULF) NMR of Electrolytes in Rechargeable Batteries

• European Conference on Magnetic Resonance (EUROMAR 2024), Bilbao, Spain (30 June – 4 July 2024)

Poster: Towards Integrative Spin and Molecular Dynamics Modelling of Relaxation Mechanisms: A case study of electrolyte solutions.

• ISMRM & ISMRT Annual Meeting & Exhibition 2024, Singapore (4 – 9 May 2024)

Oral Presentation: MRI4All: A Week-Long Hackathon for the Development of an Open-Source Ultra-Low-Field MRI System.

• Experimental Nuclear Magnetic Resonance Conference (ENC 2024), Asilomar, USA (7 – 11 April 2024)

Oral Presentation: First Principles Calculations of Molecular Properties in Electrolytes from Spin and Molecular Dynamics Simulations Coupled with Experimental Relaxation Rates.

## Am câștigat următoarele burse de cercetare:

• iNEXT Research Fellowship, Centro Risonanze Magnetiche, Firenze (May 2022 & March 2023)

Project: Relaxation dispersion experiments using long-lived spin order to monitor chemical exchange in proteins.

• DAAD Short-Term Scholarship, Max Planck Institute for Multidisciplinary Sciences, Göttingen (August 2022 – November 2022)

Project: Magnetization transfer from long-lived nuclear spin order via cross- correlated mechanisms.

• Fulbright Scholarship, New York University, New York City (September 2023 – June 2024)

Project: 31P spins as sources for long-lived magnetization storage.

## Am participat la următoarele activități științifice:

• MRI4All Hackathon 2023, New York City, USA (16 – 21 October 2023)

Member of the Magnet Team developing an open-source, 3D-printed, low-field MRI system.

• "Games of Science" National Science Communication Contest, Bucharest, Romania (10 – 11 June 2023)

Winner: Quantum physics phenomena underlying biological processes.

• TIMB3 Workshop: NMR of paramagnetic proteins and applications, Centro Risonanze Magnetiche, Firenze, Italy (7 – 8 April 2022).

• Magurele Science Summer School, Magurele, Romania (21 August – 4 September 2021)

Mentor on Atomic and Molecular Magnetism courses for high-school students.

• "UBTalks" Science Communication Contest, Bucharest, Romania (23 May 2021)

Winner: Cooking with Darwin: Searching for the ingredients of origin of life.