

Title: Personal Introduction: My Academic Journey, Passion Areas, and Research Goals within the FC-RELAX Project No. 9 titled "Pure proton-exchange based relaxation agent for MRI applications"

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Curriculum Vitae: Madalina Ranga, born in Moldova on November 28, 1999, holds Romanian nationality and possesses proficiency in English, French, Romanian, and Russian languages. She actively pursues leadership roles in team projects and her passions include traveling, learning new skills, and reading. Recently commenced her Ph.D. studies in Structural Biology at the University of Florence in November 2023, collaborating with Bracco Imaging S.p.A. as part of the Horizon Project. Madalina has joined the R&D Chemistry Team (Phys-Chem Lab) under the supervision of Zsolt Baranyai, focusing on developing a new proton-exchange relaxation agent for MRI applications.

Training and Scientific Interest:

- Bachelor's Degree:

Graduated from the University of Debrecen with a Bachelor's degree in chemistry, conducting research on the topic "Interaction of Aqueous Bovine Serum Albumin with Silica Aerogel Microparticles: Sorption Induced Aggregation," which was subsequently published (A. Forgacs, **M. Ranga**, I. Fabian, J. Kalmar, " Interaction of Aqueous Bovine Serum Albumin with Silica Aerogel Microparticles: Sorption Induced Aggregation, Int. J. Mo/. Sci. 2022, 23, 2816; <https://doi.org/10.3390/ijms23052816>).

- Master's Degree:

Attained a Master's degree in Chemistry from the University of Debrecen, specializing in the synthesis and characterization of gelatin and crosslinked gelatin aerogels

1. Regional Scientific Student Conference oral presentation, 2nd place, (oral presentation 7 November 2022)
2. State Scientific Student Conference (oral presentation, 12-15 April 2023)
3. Workshop on Aerogels Characterization and Modelling (Poster Presentation and discussion session ,29 March to 31 March 2023,)

Research project within the FC-RELAX : The anticipated results of this research are:

- 1) Successful formation and comprehensive study of Gd(III) and Eu(III) complexes using DOTP, HP-DO3P and HP2-DO2P ligands, enabling a deeper understanding of their structural and functional properties.
- 2) Identification and elucidation of the kinetic parameters governing the proton exchange between Gd(III) and Eu(III) complexes and the solvent water protons.
- 3) Revelation of in vivo catalysts facilitating the proton exchange between Gd(III) complexes and bulk solvent molecules.
- 4) In-depth studies of the thermodynamic, kinetic, and structural features necessary for the effective in vivo utilization of Gd(III) and Eu(III) complexes as MRI contrast agents, potentially paving the way for the development of novel MRI contrast agent with improved efficiency

Networking opportunities:

- Secondment at University of Florence, the structural characterization of Ln(III) complexes and adducts of Ln(III) complexes with biomolecules by the assistance of coworkers in the FC-RELAX Network and CERM institute.

- Secondment at University of Mons will focus on synthesizing and characterization of Mn(I D) complexes loaded nanoparticles with coworkers specialized for the characterization of nanosized system.
- Short term scientific mission in Ecole Normale Supérieure Paris to broaden my network with experts in the development of the new NMR facilities and the application of these new technologies to characterize metal-complexes.

Courses and conferences:

Research seminars within the Bracco Imaging and CERM institute

- Scientific presentations at the Network meetings and congresses (ISMEC and International Conference on f Elements in 2025)
- “R&D and intellectual property; Ethical issues in science and business. “