

## **Paul Vasos, Senior Researcher**

Extreme Light Infrastructure, ELI-NP  
Institute of Nuclear Physics – Horia Hulubei, IFIN-HH  
Bucharest, Magurele

Born: Ploiesti, Romania, 1977



## **Experience**

- |               |  |
|---------------|--|
| 2017- present | Senior Researcher, Institute of Nuclear Physics, IFIN-HH and Extreme Light Infrastructure (ELI-NP)   |
| 2016 - 2017   | Invited Professor, University of Bucharest   |
| 2010 - 2016   | Professor of Chemistry, Biomedical College, Paris Descartes University<br>Coordinator of the Biomolecular NMR Research Group, Paris Descartes University   |
| 2008 - 2011   | Fellow of the Swiss National Fund ('Ambizione' program), senior scientist, ISIC, Ecole Polytechnique Federale de Lausanne (EPFL)<br>Chargé de cours (Spectroscopy courses, B.Sc. 3 <sup>rd</sup> year and Ph.D. level), EPFL |
| 2005 - 2008   | Post-Doctoral Associate, Group Prof. G. Bodenhausen, EPFL<br>Planning and coordination of experiments at NMR Users Facility, EPFL  |
| 2004 - 2005   | Post-Doctoral Research Associate, Group Prof D. Fushman, University of Maryland  |

## **Education**

- |             |  |
|-------------|--|
| 2000 – 2004 | Ph.D. in Structural Biology, University of Florence, Prof. I. Bertini,<br>Prof. C. Luchinat (International Ph.D. with Univ. of Frankfurt and Univ. of Utrecht) |
| 1998 - 1999 | M.Sc., Univ. of Bucharest and Univ. Joseph Fourier, Grenoble   |
| 1995 - 1998 | B.Sc. in Molecular Physics, Univ. of Bucharest   |

## **Spoken languages**

English (fluent), French (fluent), Italian (fluent), Greek (basic level), Romanian (mother tongue)

## Project Management

<b>Program / Project</b>	<b>Role</b>	<b>Period</b>	<b>Source</b>
<i>Sustaining and transferring hyperpolarized magnetisation</i>	Coordinator	2017-2019	<b>UEFISCDI</b>
<i>Polarisation nucléaire dynamique (DNP) et dissolution suivies par électroporation</i>	Coordinator	2013-2015	<b>Fondation pour la Recherche Médicale</b>
<i>Enhanced nuclear magnetic resonance to follow biomolecules in complex environments: NMR@Com</i>	Coordinator (jointly with Ph. Savarin)	2014 – 2016	<b>IdEx, French Research Ministry</b>
<i>Equipex</i>	Partener <b>CACSICE</b> <i>Paris-en-Résonance</i>	2011 – 2018	<b>Equipex, French Research Ministry</b>
<i>Longues durées de vie de l'aimantation et hyperpolarisation pour études RMN dans la cellule</i>	Coordinator	2012 – 2015	(Ph.D. : <b>Reg Ile de France – “DIM Analytics”</b> )
<i>International Cooperation</i>	France - Romania P. Vasos and C. Deleanu	2015 - 2016	<b>Projets Hubert Curieus “BRANCUSI”</b>
<i>Storing slow processes in spin memory: long-lived states</i>	Coordinator	2008 – 2011	<b>Swiss National Science Foundation (SNSF) - Ambizione and EPFL</b>
<i>Methods for enhancing sensitivity and magnetisation lifetimes in liquid- and solid-state</i>	Partner	2008-2010	<b>Swiss National Science Foundation (SNSF)</b>
<i>Enhanced solid-state NMR</i>	Partner	2008 – 2010	<b>Comission for Technology and Innovation, CH</b> in collaboration with the <b>industrial partner, Bruker Biospin AG</b>
<i>Equipment at EPFL</i>	Partner	2006-2010	<b>EPFL</b>

Fellow of the Swiss National Science Foundation (2008 – 2011)

European Research Council project qualified in II<sup>nd</sup> round and evaluated as financeable (2011)

Nominated for the Latzis EPFL prize (2010)

Young investigator of the European Union (2001 – 2004)

Merit scholarship of the Romanian state (awarded to students in the top 5%, held between 1998-2001)

### Students and post-docs

Post-doc: A. Sadet (2017 - ), R. Balzan (2013 - 2016) – currently at MilliDrop; Ph.D. Students : L. Fernandes (2012 – 2015 at Paris-V) - IPHEOS, R. Sarkar (2006-2010) – Univ. Munchen, P. Ahuja (2007-2011) –Astra Zeneca (co-advised with G. Bodenhausen), M.Sc. Students – one at the University of Bucharest (F. Teleanu, ongoing), Univ. Paris Descarettes (10 students), EPFL (4 students).

### Teaching and administration

Ph.D. Course „*Spectroscopy and Molecular Structure*”, since 2017, University of Bucharest

Creation and coordination of the Master Program „*Spectroscopies et Analyses vers le Vivant*”, Sorbonne Paris Cite – Université Paris Descartes (with Dr A. Dobbertin), 2012 - 2016

Courses and coordination of teaching at various levels : Licence 2, Master 1, Master 2 (192 h teaching / year) in the Department of Basic and Biomedical Sciences, Université Paris Descartes (Paris-5), Sorbonne Paris Cité

Representative of the Department of Basic and Biomedical Sciences in the „*Habilitation à Diriger des Recherches*” (HDR) Comitee of the Paris Descartes University (2011 - 2014)

M.Sc. Representative in the Faculty Pedagogic Committee (2012–2016)

Research Group Representative (NMR Group) in the Department Administrative Council (2010–2016)

## **Research**

- Biomolecular structure and interactions, water-biomolecule hydrogen exchange observed using long-lived nuclear magnetization and hyperpolarization;
- Discovery of singlet-triplet nuclear magnetic transitions (‘Long-Lived Coherences’ – LLC’s), akin to electronic phosphorescence, in high-field NMR, and improvements in 2D spectral resolution based on LLC’s;
- Biomolecular effects of high dose-rate radiation driven by high-power lasers;
- Observation of the effect of the overexpression of cellular transporters on the in-cell transport of endogenous molecules hyperpolarized by dissolution-Dynamic Nuclear Polarization (DNP);
- Coordination of the assembly, tests and applications of the first dissolution-DNP system introduced in France (installed at Université Paris Descartes in 2014);
- New methods for conserving DNP-stemming polarization („long-lived states”).

## **Research Impact**

> 25 oral presentations (14 invited, 2 keynote lectures)

Three patents (EP 20060013062 / US11808950, EP20090164545 / US12662723 – first inventor, EP20090164544 / US12662724 – first inventor) assigned to Ecole Polytechnique Federale de Lausanne, Bruker Biospin, EP 20060013062 passed on to Ecole Polytechnique, Palaiseau. All patents were filed both in EU and in the US.

Hirsch index  $H = 22$ , (Web of Science > 1000 citations)

## **Prizes**

Romanian Academy prize N. Tesla, december 2019

Nominated for EPFL Latsis prize, 2009