Dragoş-Adrian ROŞCA

E-mail: dragos-adrian.rosca@univ-rennes1.fr
dragos.rosca@uni-heidelberg.de
www.rosca-lab.com
Telephone: 00491525 894 7907
Age: 39
Nationality: Romanian
orcid.org/0000-0002-0273-5495

RESEARCH EXPERIENCE AND EDUCATION

12/2023 – Present — **UNIVERSITÉ DE RENNES, Rennes, France**
Junior Professor at the University of Rennes. Team "Organometallics and Catalysis". **Tenure-track to Full Professorship in 2027**

UNIVERSITÄT HEIDELBERG, Heidelberg, Germany

01/2018 – 11/2023 — ***Junior Group Leader the Institute of Inorganic Chemistry funded by a Liebig Fellowship (Fonds der Chemischen Industrie).*** Affiliation with the chair of Prof Gade.

10/2023 — **Habilitation in Chemistry and *Venia Legendi in Inorganic Chemistry. The right to use the title Privatdozent in the German academic system.*** Topic of Habilitation thesis: Redox-active ligands for first-row transition metals (focus mainly on iron): Activation of inert bonds, catalytic applications and electronic structure.

MAX-PLANCK-INSTITUT FÜR KOHLENFORSCHUNG, Mülheim/Ruhr, Germany

10/2014 – 12/2017 — ***Alexander von Humboldt postdoctoral fellow*** in the group of Prof Alois Fürstner. Mechanistic studies and methodology development on ruthenium(II) mediated hydroelementation reactions of unsymmetrical alkynes, including isolation of reactive intermediates, low temperature NMR studies and protocol optimisation for methodology application in the total synthesis of natural products.

UNIVERSITY OF EAST ANGLIA, Norwich, United Kingdom

01/2014 – 09/2014 — ***Postdoctoral research associate in catalysis*** under the direction of Prof Manfred Bochmann
Research in olefin polymerisation catalysis: investigation of Ethyl-isobutyl-aluminoxanes (EBAO) activators

10/2010 – 10/2013 — **Doctor of Philosophy (PhD) in Chemistry, July 2014**
Research topic: Development of the coordination chemistry of Gold(III): Reported the first gold(III) hydrides, peroxides, carbon monoxide and olefin complexes - under the direction of Prof. Manfred Bochmann

09/2009 – 04/2010 — **UNIVERSITÉ DE RENNES 1, Rennes, France**
Erasmus research internship as part of the M. Sc. programme
Research topic: Investigation of alkaline-earth metal complexes stabilised through Si—H β-agostic interactions, with applications in ring opening polymerisation of cyclic esters - under the direction of Prof. Jean-François Carpentier and Dr. Yann Sarazin

BABEŞ-BOLYAI UNIVERSITY, Cluj-Napoca, Romania

10/2008 – 07/2010 — **Master of Science and Bachelor of Science Degree in Chemistry, June 2008 and July 2010**
Research topic: Organoselenium and organoantimony compounds - under the direction of Prof. Anca Silvestru and Prof. Cristian Silvestru

GRANTS, AWARDS AND SCHOLARSHIPS

05/2025 Grant from Region Bretagne for the project "Iron Catalysis for Applications in Resonant Imaging and Bioisosteric Agents" (ICARIA). €60'000

01/2025 Grant from the Region Bretagne for the project "Oriented Electrical Fields in Iron Catalysis" (OEFICAT). €20'000.

12/2024 Prize for the best lecture in Master in 2024, by the Studienstiftung Chemie und Biochemie, Heidelberg.

04/2024 Grant from the Rennes Metropole (Aide de Installation Scientifique) - €40'000.

12/2023 Grant from the *Agence nationale de la recherche (ANR)*, France - €200'000 Project "Mechanistic understanding on light-activated catalysis mediated by iron complexes"

12/2023 Grant from the University of Rennes - €125'000

03/2023 Nominated by the chemistry student society (Studienfachschaft Chemie Heidelberg) for the Ars-Legendi teaching prize

05/2022 Quality assurance grant for improving the Molecular Chemistry 2 practical course for Bachelor Students (2 x 11'000 €)

12/2020 Grant from the Deutsche Forschungsgemeinschaft (DFG), Germany - project "Exploration of the chemistry of diazine-based redox-active ligands in iron chemistry" (€223'400)

07/2020 Hengstberger Prize from the University of Heidelberg (together with Dr. Lutz Greb).
Awarded €12500, which enabled organising a symposium on the topic "Element-Ligand Cooperativity: Unifying the concepts from d-block and p-block metal chemistry" in 6-8 April 2022. The symposium was organised in hybrid form (online and on-site) with 30 on-site participants (due to Corona restrictions) and ca. 200 online participants.

01/2018 – 12/2022 Liebig Fellowship (Habilitation fellowship ofthe Fonds der Chemischen Industrie) –
the funds supported my own salary (5 years), as well as the salary of a PhD student (2 years) and consumables and instruments necessary to carry out the research project. (€342'000)

11/2015 – 11/2017 Alexander von Humboldt Fellowship for postdoctoral researchers
Funded two years of my stay at the Max-Planck Institut für Kohlenforschung, Germany

06/2013 Runner-up for the Reaxys PhD Prize

03/2013 Alan Katritzky Fellowship for Doctoral Students, University of East Anglia
Awarded to top PhD candidates at the University of Anglia, UK (1 fellowship every two years)

10/2010 Dean's Studentship (University of East Anglia)
Funded my doctoral stay at the University of East Anglia, UK

TEACHING AND OUTREACH

Student supervision and mentoring

01/2018 – Present Supervision of four PhD Students, seven MSc Students, 9 BSc students, 52 Research Interns (University of Heidelberg and University of Rennes)

University teaching

09/2024 – Present **Organometallic Catalysis: The Mechanistic Approach** – (conception and teaching of the course) – (*MSc level*, *8 lectures in English) – University of Rennes* – International Master Programme " Green and Sustainable Chemistry"

01/2024 – Present **Photochemistry and Photocatalysis** – (conception and teaching of the course) – (*MSc level*, 8 *lectures in English) – University of Rennes* – International Master Programme "Catalysis and Green Chemistry"

10/2025 – **Present** **Introduction to Computational Chemistry for Synthetic Chemists** (Lecture:12h + Workshop 12h) (Conceiving the lecture and the workshop, supervision the workshop*) (Target Audience: PhD Students in Chemistry at the University of Rennes)*

10/2021 – 02/2024 *Advanced Spectroscopic Methods course* **[Angewandte Spektroskopische Methoden]** *(MSc Level – in German) – University of Heidelberg*

10/2021 – 02/2024 Organiser for the inorganic chemistry part of the "Molecular Chemistry 2" **[Molekülchemie 2]** course and its accompanying seminar – *mandatory course for 3rd year Bachelor Students (in German) – University of Heidelberg*

11/2020 – Present Preparing and teaching the course "**Reactive Intermediates in Organometallic Homogenous Catalysis**" - *MSc level – University of Heidelberg, (14 lectures, in English)*

OTHER DUTIES, PROFESSIONAL SOCIETY MEMBERSHIPS AND ADMINISTRATION

Reviewer:

- **Scientific journals:** *Angewandte Chemie, Nature Communications, JACS Au, Chemical Science*, *Chem. Commun, Chem. Eur. J., Inorganic Chemistry*, *Dalton Transactions, Organometallics, Journal of Physical Chemistry, Advanced Synthesis and Catalysis, Organic Letters, Zeitschrift für anorganische und allegemeine Chemie*
- **Foundations and funding agencies:** *Czech Science Foundation (2020)*; Polish Science Agency (2024); *Studienstiftung des Deutschen Volkes (2021); Alexander-von-Humboldt Foundation (Feodor-Lynen-Fellowships) (2023)*

Member of the local advisory board for the *Organometallic Catalysis Directed Towards Organic Synthesis (OMCOS)* – Heidelberg (2019)

Member of the Royal Society of Chemistry, GDCh (Gesellschaft Deutscher Chemiker), Humboldt Alumni Association, Reaxys Prize Club

Organiser of the Hengstberger Symposium on Element-Ligand Cooperativity: Unifying the Concepts for d- and p-Block Element Compounds (06 – 08.04.2022 Heidelberg, with Dr. Lutz Greb, https://cooperativity-symposium.com)

SKILLS

Chemistry: Handling and characterisation of highly reactive, thermally labile complexes. Synthesis and study of synthesis of open-shell coordination compounds through physical methods (including paramagnetic NMR spectroscopy, Mössbauer, SQUID). Development of new catalytic reactions based on first row transition metals.

Instrumentation: Maintenance and operation of Oxford Xcabilur (*Agilent*) single crystal X-ray diffractometers. (Data collection and refinement); Operation of Bruker AVANCE NMR Spectrometer. (including low and high temperature measurements, setting up parameters/pulse programs for different nuclei, diffusion experiments) Gel Permeation Chromatography, Gas Chromatography, IR, UV-Vis, Mössbauer, EPR (including operation at ultracryogenic temperatures)

Computational Chemistry: Orca Computational chemistry package (preferred platform), Gaussian. Performing DFT, multi reference (CASSCF), coupled cluster calculations on open-shell transition metal complexes. Calculation of reaction pathways and of spectroscopic data (NMR, EPR, Mössbauer, Vibrational Spectroscopy, Magnetic Exchange, X-ray absorption)

IT and Automatisation: Linux (Ubuntu/Linux Mint distributions), MatLab (code editing for fitting SQUID, EPR and Mössbauer Data), Python (SciPy, NumPy, Psi4, TensorFlow, etc) and Bash Programming Languages.

Languages: English (C2 – Full working proficiency), German (C1 level, Full working proficiency), French (B1 level), Norwegian (A2 level), Hungarian (conversational), Romanian (native language)

INVITED TALKS

1. October 2019 – **Babeș-Bolyai University, Cluj-Napoca,** Romania "The Importance in Isolating Intermediates in Transition Metal-Catalysed Homogenous Reactions" (Invited by Prof. Cristian Silvestru)

2. 16 February 2021 – **University of Heidelberg** - "Entwicklung Redoxaktiver Liganden für die Eisenchemie: Elektronische Struktur und neue Möglichkeiten in der Katalyse " (Lieseberg-Kolloquium)

3. 23 June 2022 – **Online** – *"Pyrazinediimine Iron Complexes: Redox-Chemistry, Unconventional Carbenes and Reversible C–C Bond Formation"* (invited by Prof. Dr. D. Munz and Dr. Junghans-Hering, Early-Career Researchers Seminar Series)

4. 07 November 2022 – **Online** - "Development of redox-active ligands in iron chemistry: Electronic Structure and new avenues in Catalysis" (invited by Junge Wöhler-Vereinigung)

5. 29 November 2022, **University of Stuttgart,** *"Development of Redox-Active Ligands for Iron Chemistry: Electronic Structure and new avenues in Catalysis"* (invited by Prof. B. Sarkar)

6. 20 January 2023 - **Rheinland-Pfälzische Technische Universität, Kaiserslautern,** *"The Enabling Role of Redox-Active Ligands in Catalysis and Small Molecule Activation"* (invited by JProf. S. Becker)

7. 26 May 2023 – **University of Rennes, France** - *"The Enabling Role of Redox-Active Ligands in Catalysis and Small Molecule Activation"* (invited by Prof. C. Darcel and Prof. J.-F. Carpentier)

8. 13 September 2023 – University of Bayreuth – *"Adventures in cycloaddition chemistry with iron complexes: the enabling role of redox-active ligands"* (invited talk by Prof. R. Kempe in the context of the 31st Colloquy on Organometallic Chemistry for Catalysis)

9. 15 February 2024 – CaRLa Winter School, Heidelberg, organised by the University of Heidelberg and BASF (invited by Dr. Thomas Staub and Prof. Stephen Hashmi)

10. 14- 18 July 2024 - International Conference on Organometallic Chemistry, Agra, India (invited talk, invitation by Prof. Bera, Prof. Mondal and Prof. Maity)

11. 15-22 August 2024 – ACS Symposium on Catalysis (online)

CURRENT COMPOSITION OF RESEARCH GROUP

4 PhD Students (2 funded by the DFG and *Studienstiftung des deutschen Volkes* in Heidelberg, 2 funded by ANR, the University of Rennes and Region Bretagne, in Rennes)

CURRENT COLLABORATIONS

Prof. Franc Meyer and Dr. Sehiy Demeshko – Universität Göttingen (Mössbauer Spescroscopy and SQUID Magnetometry)

Prof. Torsten Gutmann – Technische Universität Darmstadt (para-Hydrogen Induced Polarisation for mechanistic studies in iron catalysed hydrogenation reactions)