ENRICO FALCONE – *CURRICULUM VITAE*

Date of birth	Nationality	ORCID	e-mail address	Webpages
5th July 1994	Italian	0000-0002-1944-3552	enrico.falcone@lcc-toulouse.fr	**ResearchGate** **LinkedIn** **ALAMBIC**

EDUCATION

2018 – 2021 **PhD** in *Biological and Therapeutic Chemistry* at **CSC Graduate School**, **University of Strasbourg** (France)
Supervisors: Prof Peter Faller and Dr Laurent Raibaut

2016 – 2018 **MSc** in *Biomolecular Chemistry* (110/110 *summa cum laude*) at **University of Catania** (Italy)

2013 – 2016 **BSc** in *Chemistry* (110/110 *summa cum laude*) at **University of Catania** (Italy)

06/2024 *Chemistry Summer School on f-Elements*, **CenTRA**, Aussois (France)

05/2019 *School of Chemistry of Metals in Biological Systems*, **ITQB NOVA**, Oeiras (Portugal)

09/2017 *Advanced School on Protein Structure and Dynamics*, **University of Parma** (Italy)

CURRENT POSITION

10/2025 ***Chargé de Recherche* (*tenured CNRS Researcher*)**
ALAMBIC group, **Laboratoire de Chimie de Coordination,** CNRS, Toulouse

RESEARCH EXPERIENCE

2024 – 2025 **Post-Doc** at **Laboratoire de Chimie de Coordination,** CNRS, Toulouse, ALAMBIC group (Christelle **Hureau**)
Topic: *Interaction of lanthanide(III) ions and complexes with amyloid-β peptides*

2022 – 2023 **Post-Doc** at **University of Nottingham**, School of Chemistry, Luisa **Ciano** group
Topic: *Characterization of natural LPMOs and de novo design of LPMO-like peptide mimics*

05/2023 Visiting Post-Doc *at* **Université Libre de Bruxelles**, CPBL, David **Cannella** group
Topic: *Recombinant expression of LPMOs in bacteria and yeast*

2021 – 2022 **Post-Doc** at **University of Strasbourg**, Institut de Chimie (UMR 7177), **BCB** group
Topic: *ROS generation by Cu ions and Cu-based drugs in the presence of biological reductants*

2018 – 2021 **PhD** at **University of Strasbourg**, Institut de Chimie (UMR 7177), **BCB** group
Topic: *Development of lanthanide-based peptide probes for Cu^{2+} detection in biological media*

April-July 2018 ***Erasmus+* Internship** at **University of Strasbourg**, Institut de Chimie (UMR 7177), **BCB** group
Topic: *Cu^{2+}-binding to native and carbonylated α-Synuclein model peptides*

March 2018 **MSc Internship** at **IBB-CNR**, Catania (supervisor: Francesco **Bellia**)
Topic: *Characterization of α-Synuclein carbonylation by acrolein through UHPLC-ESI-MS*

2017 – 2018 **MSc Internship** at **University of Catania**, Department of Chemical Sciences, Graziella **Vecchio** group
Topic: *Spectroscopic studies of α-Synuclein aggregation*

TEACHING AND SUPERVISION

2022 – 2023 **Tutorials** of *Fundamental Inorganic Chemistry* at University of Nottingham, School of Chemistry

2018 – 2023 **Co-supervision** of 1 *BSc* (3mos.), 2 *MSc* (1x4 mos.,1x6mos) and 3 *visiting PhD* (1x1wk.,1x2mos.,1x6mos.) students

EXPERTISE

Design and characterization of metal-binding peptides and proteins; Copper coordination, reactivity and biochemistry; Lanthanides coordination and luminescence; Dioxygen activation and ROS; Fluorescent probes; amyloid aggregation

TECHNICAL SKILLS

Spectroscopy (UV-vis, Fluorescence, time-resolved and low-temperature Luminescence, CD, EPR, NMR, XAS, FT-IR, Raman); Peptide synthesis (SPPS, Native Chemical Ligation, Cys desulfurization, cyclization) and purification (RP-HPLC); Protein expression (E. coli, P. pastoris) and purification (IMAC, SEC); Peptide/protein characterization by LC-MS and MALDI-MS

COMPUTER SKILLS

Windows, Linux, MS Office, Origin, Chemdraw, PyMOL, Xcalibur, Chromeleon, MagTran, Xenon, Easyspin, Mnova, TopSpin

LANGUAGE SKILLS

Italian (*native*), English (*fluent*), French (*fluent*)

PEER-REVIEW

Since 2019, >**10** manuscripts for journals including *JACS*, *Chem. Sci.*, *Chem. Eur. J.*, *J. Inorg. Biochem.*, *Metallomics*, *Coord. Chem. Rev.*

OUTREACH

SHARPER Night (Catania, 2018), *Fête de la Science* (Strasbourg, 2018), *Science in the Park* (Nottingham, 2023)

PROFESSIONAL RESPONSIBILITIES

Co-chair of *Young Investigator Seminar* 2024 (LCC, Toulouse); Staff member of *MBP-2024*, *MBP-2022*, *FrenchBIC-2020*

GRANTS AND AWARDS

2 PhD Thesis Awards (*Research Committee of the University of Strasbourg* and *French EPR Association (ARPE)*, 2022)
2 Best Oral Communication Prize (*FrenchBIC-2020* and *MBP-2024*)
Best Poster Prize (*CuBICS-2018*)
PhD Fellowship, *Complex Systems Chemistry Graduate School Strasbourg, 2018*
Erasmus+ Traineeship Mobility Grant, *2018*
Conference Travel Grant *(£500, University of Nottingham) for the participation at ISABC-2023*
International Collaboration Fund *(£2900, University of Nottingham, 2023) for a research stay at ULB Brussels*

PUBLICATIONS

20 publications: 15 research articles, 4 reviews, 1 book chapter; 15 as (co[†])first, 5 as (co)corresponding author*, 1 as last author

19. M. Bagrel, C. Hureau* and E. Falcone*, *A cocktail of two chelators is not better than one ligand in excess to halt the Cu,Zn-(amyloid-β)-induced ROS production in the context of Alzheimer's disease*, ***Inorg. Chem.***, 2025 (doi: 10.1021/acs.inorgchem.5c03352)

19. E. Falcone*, E. Mathieu* and C. Hureau, *Lanthanide(III)-binding peptides and proteins: coordination properties and applications,* ***Chem. Soc. Rev.***, 2025, (doi: 10.1039/D4CS01148A) – ***Back Cover***

18. M.-J. Tilly, E. Falcone, B. Kieffer, Y.-N. François, P. Faller, M. Desage-El Murr and L. Raibaut*, *A ^{19}F-ATCUN Peptide NMR Probe for Selective Cu^{2+} or Ni^{2+} Sensing in Complex Biological Media*, ***Chem. Eur. J.***, 2025, (doi: 10.1002/chem.202501784)

17. E. Falcone, R. Tomey, E. Turley, D. Cannella, D. Robinson and L. Ciano*, *De novo designed* β*-hairpin peptides mimicking the LPMO copper-binding histidine brace motif*, ***Angew. Chem. Int. Ed.,*** 2025 (doi: 10.1002/anie.202513990) – *Hot Paper*

16. L. de Cremoux, E. Falcone, D. Schmitt, E. Stefaniak, M. D. Wiśniewska, N. Vitale, W. Bal and C. Hureau*, *Modulation of Aβ(1-40) and Aβ(4-40) co-assembly by zinc: getting closer to the biological reality*, ***Inorg. Chem. Front.***, 2025 (doi: 10.1039/D5QI00850F)

15. L. Leprevost, S. Jünger, G. Lippens, C. Guillaume, G. Sicoli, L. Oliveira, E. Falcone, E. De Santis, A. Rivera-Millot, G. Billon, F. Stellato, C. Henry, R. Antoine, S. Zirah, S. Dubiley*, Y. Li* and F. Jacob-Dubuisson*, *A widespread family of ribosomal peptide metallophores involved in bacterial adaptation to metal stress*, ***Proc. Natl. Acad. Sci.***, 2024 (doi: 10.1073/pnas.2408304121)

14. E. Falcone,[†] V. Vigna,[†] H. Schueffl, F. Stellato, B. Vileno, M. Bouraguba, G. Mazzone, O. Proux, S. Morante, P. Heffeter, E. Sicilia* and P. Faller*, *When Metal Complexes Evolve, and a Minor Species Is the Most Active: the Case of Bis(Phenanthroline)Copper in the Catalysis of Glutathione Oxidation and Hydroxyl Radical Generation*, ***Angew. Chem. Int. Ed.***, 2024 (doi: 10.1002/anie.202414652) – *Hot Paper*

13. E. Falcone and C. Hureau*, *Redox processes in Cu-binding proteins: the "in-between" states in intrinsically disordered peptides*, ***Chem. Soc. Rev.***, 2023 (doi: 10.1039/d3cs00443k)

12. L. Zuily, N. Lahrach, E. Falcone, M. Bouraguba, V. Lebrun , E. Lojou, MT Giudici-Orticoni, P. Faller* and M. Ilbert*, *Ligands as a tool to tune the toxicity of Cu on bacteria: from boosting to silencing*, in ***Copper Bioinorganic Chemistry: From Health to Bioinspired Catalysis***, WSPC, 2023 (doi: 10.1142/9789811269493_0001)

11. M. Schaier,[†] E. Falcone,[†] T. Prstek, P. Fronik, B. Vileno, S. Hager, B. K. Keppler, P. Heffeter*, G. Koellensperger*, Peter Faller* and Christian R. Kowol*, *Human Serum Albumin as a Copper Source for Anticancer Thiosemicarbazones*, ***Metallomics***, 2023 (doi: 10.1093/mtomcs/mfad046**)**

10. E. Falcone*, F. Stellato, B. Vileno, M. Bouraguba, V. Lebrun, M. Ilbert, S. Morante and P. Faller*, Revisiting the pro-oxidant activity of copper: interplay of ascorbate, cysteine and glutathione*, ***Metallomics***, 2023 (doi: 10.1093/mtomcs/mfad040)

9. E. Falcone, G. Nobili, M. Okafor, O. Proux, G. Rossi, S. Morante, P. Faller* and F. Stellato*, *Chasing the Elusive "In-Between" State of the Copper-Amyloidβ Complex by X-ray Absorption through Partial Thermal Relaxation after Photoreduction*, ***Angew. Chem. Int. Ed.***, 2023 (doi: 10.1002/anie.202217791) – *Hot Paper*

8. A. G. Ritacca,[†] E. Falcone,[†] I. Doumi, B. Vileno, P. Faller* and E. Sicilia*, *Dual Role of Glutathione as a Reducing Agent and Cu-Ligand governs the ROS production by Anticancer Cu-Thiosemicarbazone Complexes*, ***Inorg. Chem.***, 2023 (doi: 10.1021/acs.inorgchem.2c04392)

7. E. Falcone and P. Faller*, *Thermodynamics-based rules of thumb to evaluate the interaction of chelators and kinetically-labile metal ions in blood serum and plasma*, ***Dalton Trans.,*** 2023, 52, 2197-2208 (doi: 10.1039/D2DT03875G)

6. E. Falcone,† A. G. Ritacca,† S. Hager, H. Schueffl, B. Vileno, Y. El Khoury, P. Hellwig, C. R. Kowol, P. Heffeter*, E. Sicilia* and P. Faller,* *Copper-catalyzed glutathione oxidation is accelerated by the anticancer thiosemicarbazone Dp44mT and further boosted at lower pH*, ***J. Am. Chem. Soc.***, 2022, 144, 32, 14758–14768 (doi: 10.1021/jacs.2c05355)

5. E. Falcone*, M. Okafor, N. Vitale, L. Raibaut, A. Sour and P. Faller*, *Extracellular Cu^{2+} pools: from current knowledge to next-generation probes*, ***Coord. Chem. Rev.,*** 2021, 433, 213727 (doi: 10.1016/j.ccr.2020.213727)

4. E. Falcone*, B. Vileno, M. Hoang, L. Raibaut and P. Faller*, *A luminescent ATCUN peptide variant with enhanced properties for copper(II) sensing in biological media*, ***J. Inorg. Biochem.***, 2021, 221, 111478 (doi: 10.1016/j.jinorgbio.2021.111478)

3. E. Falcone, P. Gonzalez, L. Lorusso, O. Sénèque, P. Faller* and L. Raibaut*, *A Terbium(III) luminescent ATCUN-based peptide sensor for selective and reversible detection of Copper(II) in biological media*, ***Chem. Commun.,*** 2020, 56, 4797-4800 (doi: 10.1039/D0CC01007C)

2. E. Falcone, I. M. M. Ahmed, V. Oliveri*, F. Bellia*, B. Vileno, Y. El Khoury, P. Hellwig, P. Faller* and G. Vecchio, *Acrolein and Copper as Competitive Effectors of α-Synuclein*, ***Chem. Eur. J.***, 2020, 26, 1871 (doi: 10.1002/chem.201904885) – *Hot Paper*; *featured on ChemistryViews*

1. E. Falcone, A. Sour, V. Lebrun, G. Ulrich, L. Raibaut* and P. Faller*, *Reversible turn-on fluorescent Cu(II) sensors: rather dream than reality?***, *Dalton Trans.,*** 2019, 48, 14233-14237 (doi: 10.1039/C9DT02864A)

COMMUNICATIONS

Invited lectures (5)

5. *Harnessing metal complexes for biomedical applications*, 26th June **2025**, University of Calabria, **Cosenza** (Italy)

4. *A tale of metal ions in cancer: from metalloplasia to metal-based therapy and diagnosis*, 16th December **2024**, INFN **Rome**

3. *Copper ligands for biomedical applications: from luminescent sensors to anticancer drugs*, 24th April **2023**, LCC-CNRS, **Toulouse**

2. *Developing luminescent probes to study extracellular Cu trafficking*, 24th February **2023**, IBB, **Warsaw**

1. *Study of Cu-complexes for potential diagnostic or therapeutic applications in Cu-related diseases*, Journées de l'ARPE **2022**, **Paris**

Oral presentations (7)

7. E. Falcone, A. Brison, C. Allué, E. Mathieu and C. Hureau, I*mpact of lanthanide(III) ions on the aggregation of amyloid-β peptides*, ***2nd International Conference on Metal-Binding Peptides***, 10-12th July 2024, Toulouse (France)

6. E. Falcone, H. Schueffl, B. Vileno, F. Stellato, A. G. Ritacca, V. Vigna, E. Sicilia, P. Heffeter and P. Faller, *Influence of pH and glutathione on the pro-oxidant activity of copper-based drugs*, ***4ème Journées du GDR ChemBio***, 6-7th June 2024, Bordeaux (France)

5. E. Falcone, R. Tomey, E. Turley and L. Ciano, *Development of de novo designed β-hairpins as LPMO mimics*, **ISABC 16**, 11th-14th June 2023, Ioannina (Greece)

4. E. Falcone, O. Sénèque, L. Raibaut and P. Faller, *Developing luminescent probes to study extracellular Cu trafficking*, ***Copper meeting***, 18th – 22nd September 2022, Sorrento (Italy)

3. E. Falcone, O. Sénèque, L. Raibaut and P. Faller, *Ratiometric luminescent detection of exchangeable Copper(II) in biological samples*, ***International Conference on Metal Binding Peptides (MBP)***, 5th – 8th July 2022, Nancy (France)

2. E. Falcone, A. Sour, V. Lebrun, P. Gonzalez, L. Lorusso, G. Ulrich, O. Sénèque, L. Raibaut and P. Faller, *Towards reversible and specific luminescent sensing of Cu^{2+} in biological media*, ***French Bio-Inorganic Chemistry Web-Symposium*** *2020*, 12th – 14th October 2020

1. E. Falcone, P. Gonzalez, L. Lorusso, O. Sénèque, P. Faller and L. Raibaut, *A luminescent peptide probe for extracellular Cu^{2+} detection*, ***12th International BioMetals Web-Symposium***, 6th – 10th July 2020

Posters (4)

4. E. Falcone, R. Tomey, E. Turley, L. Ciano, *Development of LPMO mimics based on de novo designed peptides*, ***RSC Dalton Conference***, 18th-20th April 2023, Coventry (UK)

3. E. Falcone, B. Vileno, A. G. Ritacca, S. Hager, V. Lebrun, C. R. Kowol, P. Heffeter, E. Sicilia and P. Faller, *Insights into the pro-oxidant activity of Cu and Cu-based drugs with glutathione*, ***Copper meeting***, 18th – 22nd September 2022, Sorrento (Italy)

2. E. Falcone, B. Vileno and P. Faller, *Human serum albumin as a potential metal source for anticancer thiosemicarbazones in the extracellular milieu*, ***French Bio-Inorganic Chemistry Symposium 2021***, 10th – 13th October 2021, Obernai (France)

1. E. Falcone, I. Mohamed Mohamud Ahmed, F. Bellia, V. Oliveri and G. Vecchio, *Interplay of α-Synuclein, Acrolein and Copper,* ***Copper Bio-Inorganic Chemistry Symposium,*** 21st – 24th May 2018, Marseille (France)