
DR. JOHANN BOSSON
ASSISTANT PROFESSOR



Koç University
Chemistry Department
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Professional experiences

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| Since 2021 | Visiting Researcher
Chemistry Department
Research:
Development new organic catalysts for the photo(electro)reduction of CO ₂
<i>This project benefits from the financial support of TÜBİTAK under the 2236 Co-Funded Brain Circulation Scheme2 (CoCirculation2, project No 120C082)</i> | Koç University, Turkey |
| 2014 – 2020 | Assistant Prof.
Department of Organic Chemistry – Group of Prof. Jérôme Lacour – Stable carbenium ion chemistry
Research:
Synthesis and characterization of electrochemical and (chir)optical properties of charged chiral compounds
Theoretical chemistry for the elucidation of reaction mechanisms and the prediction of optical properties
Cell culture and bioimaging
Prospection for new projects and collaborations and management of ongoing collaborations
Teaching:
Participation to the teaching of organic chemistry courses for the 1 st year students in biochemistry and pharmacy (ca. 300 students, ca. 10 h / semester + 3 h tutorial)
Tutorials of organic chemistry for the 1 st year medical students (ca. 100 students, 20 h / semester)
Codirection of a PhD student: thesis defended in 2017 with 7 publications
Mentor for the PhD students of the group
Admin:
Supervision of the Stable carbenium ion topic
Interaction between the different topics of the group (catalysis, macrocycles, stereogenic nitrogen)
Participation to the writing of proposals for financial support | University of Geneva, Switzerland |
| 2011 – 2014 | Post-doctoral position
Department of Organic Chemistry and NCCR ChemBio
Group of Prof. Jérôme Lacour – Synthesis and applications of stable carbenium ions
Research:
Design of cationic heterocyclic compounds, evaluation of their chiroptical properties
Development of biological applications
Teaching:
Supervision of the teaching lab in organic chemistry for 1 st – 3 rd students in chemistry (50 h / semester)
Supervision of a PhD student | University of Geneva, Switzerland |
| 2009 – 2010 | Research fellow in catalysis
Group of Prof. Steve P. Nolan – Organometallic chemistry, gold and ruthenium catalysis
Development of innovative chemical processes and optimization of reaction conditions
Synthesis of organometallic species
Project management, team management, supervision of a Master student | University of St Andrews, UK |
| 2008 – 2009 | Research fellow in medicinal chemistry
A.R.C.: French Cancer Research Association – Development of anticancer agents
Optimization of anticancer properties using Structure-Activity Relationship
Enantioselective synthesis of heterocyclic compounds
Multidisciplinary collaborations including biologists, crystallographers and modelers | A.R.C., France |

- 2005 – 2008 **PhD project in organic chemistry** **C.N.R.S., France**
Group of Dr. Philippe Belmont – Development of anticancer agents
Research:
Multi-step enantioselective synthesis of anticancer heterocyclic compounds
Development and optimization of new synthetic pathways
Discovery of a new class of anticancer agents
Multidisciplinary collaborations including biologists, crystallographers and modelers
Teaching:
Supervision of 2 Master students
Supervision of teaching lab for 1st and 2nd year students in organic chemistry at **E.S.C.P.E.-Lyon**
- 2003 – 2004 **1 year industrial placement** **Bayer CropScience**
5 months: La Dargoire, **France** - Development of a new class of fungicides
6 months: Monheim, **Germany** - Watch on science, preliminary study of a new class of fungicides

Education

- 2005 – 2008 **PhD in organic chemistry** **C.N.R.S., University of Lyon, France**
Financial support of the European Union through a fellowship for a 40 M€ project aiming at developing new anticancer agents
- 2004 – 2005 **Master degree in organic chemistry** **University of Lyon, France**
Under the guidance of Dr. Philippe Belmont
Subject: Synthesis of potential inhibitors of the telomerase activity
- 2001 – 2005 **Lyon's High School of Chemistry and Chemical Engineering** **E.S.C.P.E.-Lyon, France**
"Ingénieur" diploma in chemistry and chemical process engineering
E.S.C.P.E.: on selective admission only
Main topics: organic chemistry, process engineering, analytical chemistry
Other topics: chemistry of polymers, chemistry of biologically active compounds, management, marketing, economy, patents, health-safety-environment
- Languages:** English: fluent - working language
 French: native language
 German: basic working knowledge
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Publications

22. R. Tarrieu, I. Hernandez Delgado, F. Zinna, V. Dorcet, S. Colombel-Rouen, C. Crévisy, O. Baslé, J. Bosson, J. Lacour, *Chem. Commun.*, **2021**, DOI: 10.1039/D1CC00898F. Hybrids of Cationic [4]Helicene and N-Heterocyclic Carbene as Ligands for Complexes Exhibiting (Chir)Optical Properties in the Far Red Spectral Window.
21. J. Bosson, G. M. Labrador, C. Besnard, D. Jacquemin, J. Lacour, *Angew. Chem. Int. Ed.* **2021**, DOI: 10.1002/anie.202016643. Chiral Near-Infrared Fluorophores by Self-Promoted Oxidative Coupling of Cationic Helicenes with Amines / Enamines.
20. H. Li, R. Duwald, S. Pascal, S. Voci, C. Besnard, J. Bosson, L. Bouffier, J. Lacour and N. Sojic, *Chem. Commun.* **2020**, **56**, 9771-9774. Near-infrared electrochemiluminescence in water through regioselective sulfonation of diaza [4] and [6]helicene dyes.
19. R. Duwald, J. Bosson, S. Pascal, S. Grass, F. Zinna, C. Besnard, L. Di Bari, D. Jacquemin, J. Lacour, *Chem. Sci.* **2020**, **11**, 1165-1169. Merging polyacenes and cationic helicenes: from weak to intense chiroptical properties in the far red region.
18. G. M. Labrador, C. Besnard, T. Bürgi, A. I. Poblador-Bahamonde, J. Bosson, J. Lacour, *Chem. Sci.* **2019**, **10**, 7059-7067. Stereochemical significance of O to N atom interchanges within cationic helicenes: experimental and computational evidence of near racemization to remarkable enantiospecificity.
17. Z. Jarolimova, J. Bosson, G. M. Labrador, J. Lacour, E. Bakker, *Electroanal.*, **2018**, **30**, 1378–1385. Ion Transfer Voltammetry in Polyurethane Thin Films Based on Functionalised Cationic [6]Helicenes for Carbonate Detection.
16. C. Bauer, R. Duwald, G. M. Labrador, S. Pascal, P. Moneva Lorente, J. Bosson, J. Lacour, J. D. Rochaix, *Org. Biomol. Chem.*, **2018**, **16**, 919–923. Specific labeling of mitochondria of Chlamydomonas with cationic helicene fluorophores.
15. Z. Jarolimova, J. Bosson, G. M. Labrador, J. Lacour, E. Bakker, *Electroanal.*, **2018**, **30**, 650–657. Ion Transfer Voltammetry at Thin Films Based on Functionalized Cationic [6]Helicenes.
14. R. Duwald, S. Pascal, J. Bosson, S. Grass, C. Besnard, T. Bürgi and J. Lacour, *Chem. Eur. J.*, **2017**, **23**, 13596–13601. Enantiospecific Elongation of Cationic Helicenes by Electrophilic Functionalization at Terminal Ends.
13. H. Li, S. Voci, A. Wallabregue, C. Adam, G. M. Labrador, R. Duwald, I. Hernández Delgado, S. Pascal, J. Bosson, J. Lacour, L. Bouffier, N. Sojic, *ChemElectroChem*, **2017**, **4**, 1750–1756. Efficient Annihilation Electrochemiluminescence of Cationic Helicene Luminophores.
12. H. Li, A. Wallabregue, C. Adam, G. M. Labrador, J. Bosson, L. Bouffier, J. Lacour, N. Sojic, *J. Phys. Chem. C*, **2017**, **121**, 785–792. Bright Electrochemiluminescence Tunable in the Near-Infrared of Chiral Cationic Helicene Chromophores.
11. J. Bosson, G. M. Labrador, S. Pascal, F.-A. Miannay, O. Yushchenko, H. Li, L. Bouffier, N. Sojic, R. C. Tovar, G. Muller, D. Jacquemin, A. D. Laurent, B. Le Guennic, E. Vauthey, J. Lacour, *Chem. Eur. J.* **2016**, **22**, 18394–18403. Physicochemical and Electronic Properties of Cationic [6]Helicenes: from Chemical and Electrochemical Stabilities to Far-Red (Polarized) Luminescence.
- Highlighted as Front Cover of *Chem. Eur. J.*, Vol. 22, No. 51, **2016**.
10. G. M. Labrador, J. Bosson, Z. S. Breitbach, Y. Lim, E. R. Francotte, R. Sabia, C. Villani, D. W. Armstrong, J. Lacour, *Chirality* **2016**, **28**, 282–289. High-Performance Liquid Chromatographic Resolution of Neutral and Cationic Hetero[6]Helicenes.
9. C. Adam, A. Wallabregue, H. Li, J. Gouin, R. Vanel, S. Grass, J. Bosson, L. Bouffier, J. Lacour, N. Sojic, *Chem. Eur. J.* **2015**, **21**, 19243–19249. Electrogenated Chemiluminescence of Cationic Triangulene Dyes: Crucial Influence of the Core Heteroatoms.
8. J. Bosson, J. Gouin, J. Lacour, *Chem. Soc. Rev.* **2014**, **43**, 2824–2840. Cationic Triangulenes and Helicenes: Synthesis, Shemical Stability, Optical Properties and Extended Applications of these Unusual Dyes.
7. F. Torricelli, J. Bosson, C. Besnard, M. Chekini, T. Bürgi, J. Lacour, *Angew. Chem. Int. Ed.* **2013**, **52**, 1796–1800. Modular Synthesis, Orthogonal Post-Functionalization, Absorption and Chiroptical Properties of Cationic [6]Helicenes.
6. J. Bosson, A. Poater, L. Cavallo, S. P. Nolan, *J. Am. Chem. Soc.* **2010**, **132**, 13146–13149. Mechanism of Racemization of Chiral Alcohols Mediated by 16-Electron Ruthenium Complexes.
5. S. Gaillard, J. Bosson, R. S. Ramón, P. Nun, A. M. Slawin, S. P. Nolan, *Chem. Eur. J.* **2010**, **16**, 13729–13740. Development of Versatile and Silver-Free Protocols for Gold (I) Catalysis.
4. J. Bosson, S. P. Nolan, *J. Org. Chem.* **2010**, **75**, 2039–2043. N-Heterocyclic Carbene - Ruthenium Complexes for the Racemization of Chiral Alcohols.

3. R. S. Ramón, J. Bosson, S. Díez-González, N. Marion, S. P. Nolan, *J. Org. Chem.* **2010**, *75*, 1197–1202. Au/Ag-Cocatalyzed Aldoximes to Amides Rearrangement under Solvent- and Acid-free Conditions.
2. P. Belmont, J. Bosson, T. Godet, M. Tiano, *Anti-Cancer Agents in Medicinal Chemistry*, **2007**, *7*, 139–169. Acridine and Acridone, Anti-Cancer Properties and Synthetic Methods: Where Are We Now?
1. T. Godet, J. Bosson, P. Belmont, *Synlett*, **2005**, *18*, 2786–2788. Efficient Based-Catalyzed 5-exo-dig Cyclization of Carbonyl Groups on Unactivated Alkynyl Quinolines: An Entry to Versatile Oxygenated Heterocycles Related to the Furoquinoline Alkaloids Family.
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Patents

2. P. O. Belmont, L. Meijer, P. Cohen, A. Patin, J. Bosson, P. G. Goekjian, Tetrahydrocyclopenta[c]acridine Derivatives as Kinase Inhibitors and Biological Applications Thereof. PCT Int. Appl. (2009), 37pp. **WO 2009090623**
1. P. O. Belmont, L. Meijer, P. Cohen, A. Patin, J. Bosson, P. G. Goekjian, Derivatives of Tetrahydrocyclopenta[c]acridines Inhibiting Kinases and Their Biological Applications. Fr. Demande (2009), 32pp. **FR 2926550**
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Invited lectures

- 2019-02: Koç University (Istanbul, Turkey), “Cationic Helicenes - Design and Applications”.
- 2015-08: Sabancı University (Istanbul, Turkey), “Cationic Helicenes and Triangulenes - Design and Applications”.
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Conferences

- 2019-07: Chirality Conference (Bordeaux, France). Poster: “Stereochemical significance of O to N atom interchanges within cationic helicenes: experimental and computational evidence of near racemization to remarkable enantiospecificity”.
- 2017-09: 26th FJS Symposium (Strasbourg, France). Poster: “Synthesis, Late-Stage Functionalization and Properties Cationic [6]Helicene Fluorophores”.
- 2017-05: Bürgenstock Conference (Brünnen, Switzerland). Poster: “Synthesis, Late-Stage Functionalization and Properties Cationic [6]Helicene Fluorophores”.
- 2015-09: JACC 2015 (Lyon, France). Talk: “Synthesis and Post-Functionalization of Cationic [6]Helicene Fluorophores”.
- 2014-08: ISACS14 (Shanghai, China). Poster: “Modular Synthesis and Post-Functionalization of Cationic [6]Helicenes. Controlling the Optical Properties of a New Family of NIR Dyes”.
- 2013-09: SCS Fall Meeting (EPFL Lausanne, Switzerland). Poster: “Modular Synthesis and Post-Functionalization of Cationic [6]Helicenes. Controlling the Optical Properties of a New Family of NIR Dyes”.
- 2013-06: NCCR ChemBio (Villars-sur-Ollon, Switzerland). Talk: “Modular Synthesis and Post-Functionalization of Cationic [6]Helicenes - Controlling the Optical Properties of a New Family of NIR Dyes”.
- 2012-09: SCS Fall Meeting (ETH Zurich, Switzerland). Poster: “Modular Synthesis, Orthogonal Functionalization and Properties of Novel Cationic [6]Helicenes”. *Best poster award*.
- 2012-09: ICOMC (Lisbon, Portugal). Poster: “Modular Synthesis, Orthogonal Functionalization and Properties of Novel Cationic [6]Helicenes”.
- 2012-06: NCCR ChemBio (Jongny, Switzerland). Poster: “Stable Carbocations as Fluorescent Dyes and Multipodal Platforms”.
- 2008-06: SFC Rhône-Alpes, Journée de Printemps (Grenoble, France). Poster: “Dérivés d’Acridine Inhibiteurs de Kinases Dépendantes des Cyclines”.
- 2008-05: SECO 45 (La Colle sur Loup, France). Talk: “Dérivés d’Acridine Inhibiteurs de Kinases Dépendantes des Cyclines”.
- 2008-03: RECOB 12 (Aussoix, France). Talk: “Dérivés d’Acridine Inhibiteurs de Kinases Dépendantes des Cyclines”.
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Proceedings

- J. Bosson, J. Harfouche, P. Belmont. *Eur. J. Pharm. Sci.* **2006**, *28*, Suppl. 1, S20. Design and Synthesis of a New Family of Protein Kinase Inhibitors.