



# OLIVIER BARDAGOT

GROUP LEADER AT ICPEES - CNRS STRASBOURG

## EXPERIENCE

### CONTACTS

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11-07-1993, France

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### PROFILE

Passionate early-stage group leader with 9+ years of experience in organic electronics. Physico-chemist, expert in semiconductor doping. Large (inter)national network of collaborators. Dedicated mentor. Fluent in French and English with excellent writing and oral skills.

### LANGUAGES

|         |               |
|---------|---------------|
| French  | Mother tongue |
| English | C2 - Fluent   |
| German  | B1            |
| Spanish | B1            |

### COMPUTING

Python, LabVIEW, Density Functional Theory, C++

OriginLab, Igor, Zotero, ChemOffice, MestReNova, WSxM, Topspin

### INTERESTS

Volunteering  
Bouldering & trail  
Chess  
Drum & guitar

#### Chargé de Recherche CNRS | 01/02/2023 – current position

*French National Centre for Scientific Research (CNRS), Strasbourg, France*

- **Tenured associate professor**, at ICPEES (UMR 7515): research activities focused on the optimization of organic electrochemical transistors (OECTs) thanks to anisotropic elaborations of polymer films. Innovative biosensors for water quality monitoring and neuropathology early-diagnosis are under developments.

#### Post-doctoral Research Associate | 01/01/2020 – 31/01/2023

*University of Bern, Bern, Switzerland – Prof. Natalie Banerji*

- Time-resolved spectroscopy and semiconducting polymer doping.

#### PhD – with Committee Praise | Defended on 15/10/2019

*Université Grenoble Alpes (UGA), Alternative Energies and Atomic Energy Commission (CEA) Grenoble, France | 15/10/2016 – 14/10/2019*

- **N-type organic semiconductors for energy conversion**: Organic photovoltaics (OPVs) and thermoelectricity (OTEGs), polymer doping, doping mechanistic, organic field-effect transistors (OFETs), morphological studies, organic chemistry, DFT modeling

#### Mentoring and teaching | 2016 – on-going

- 7 x PhD candidates (4 on-going in France, Switzerland, Canada)
- 6 x MSc students and 2 x BSc students
- Teaching: Organic electronic technologies (MSc 2 lectures, ECPM Strasbourg), Quantum chemistry (BSc 2 tutorial and lectures, University of Bern), Physical chemistry of aqueous solutions (BSc 2 practical, UGA), Organic chemistry (BSc 1 tutorial, Grenoble INP), Polymer-based solar cells (PhD/postdoc practical, CEA Grenoble)

#### Research internship | 01/12/2015 – 01/06/2016

*Imperial College London, Centre for Plastic Electronics, London, UK*

- Zone-casting of semiconducting polymers for OFETs and OPVs

#### Research internship | 01/06/2015 – 01/09/2015

*Central Research Institute of Electric Power Industry, Tokyo, Japan*

- Development of organic light-emitting electrochemical cells (LECs)

## EDUCATION

#### Imperial College International Diploma – first class honors

*Imperial College London, Department of Physics, UK | 2015 – 2016*

#### MSc in Physics and Nanoscience engineering – first class honors

*Grenoble Institute of Technology Phelma (INP), France | 2013 – 2016*

## KEYWORDS

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Organic mixed ionic-electronic conductor (OMIEC), Organic electrochemical transistor (OECT), Doping mechanism, Organic thermoelectricity (OTE), Organic photovoltaics (OPV).

## RESEARCH OBJECTIVE

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The research objective of my team is to **control the macroscale and nanoscale morphologies** of organic **semiconducting polymer thin films** to develop **functional, cost-efficient, portable, and environmentally friendly** organic electronic devices. The group aims to optimize **organic electrochemical transistors (OECTs)** in views of providing a new generation of biosensors for rapid, accurate, selective, on-side, and low-cost quantification of pollutants and bacterial contaminations to identify water drinkability (UN goal 6) and to achieve early-diagnosis of neuropathologies (UN goal 3). To achieve these goals, the group elaborates **new highly-structured polymer films** with a focus on understanding the **fundamental mechanisms** driving their chemical and electrochemical **doping**. We are combining a wide range of **microscopy** techniques, with ***in-operando* advanced spectroscopic** and **electrical characterization techniques** to rationally guide **molecular** and **device engineering**. To carry out this highly **interdisciplinary research**, the group is collaborating with internationally-renowned (i) **chemists**, to provide start-of-the-art performing polymers tailored to answer our research questions, (ii) **physico-chemists**, to access top-notch characterization instruments to clarify specific questions with pinpoint accuracy, and (iii) **biologists**, to valorize our findings and move up the Technology Readiness Level scale by developing functional biosensors.

## GRANTS (AS COORDINATOR)

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|      |                                                                                                                                                                  |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2025 | 46'000 € – MITI Réseaux de capteurs, project GlySens : “Capteurs organiques pour le suivi continu de la concentration de glyphosate dans les eaux de surface”.   |
| 2024 | 240'412 € – ANR JCJC, young researcher national grant, project <a href="#">CAROT</a> : “Controlled anisotropy for transistors with record-breaking performance”. |
| 2024 | 14'000 € – PEPS Energie CNRS grant, project <a href="#">PoroTOP</a> .                                                                                            |
| 2023 | 55'000 € – Attractivité IdEx, University of Strasbourg grant, MAESTRO.                                                                                           |

## PUBLICATIONS

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1. *Over Tenfold Increase in Current Amplification Due to Anisotropic Polymer Chain Alignment in Organic Electrochemical Transistors*, **O. Bardagot\***, P. Durand, S. Guchait, H.Y. Wu, I. Holzer, W. Errafi, V. Bouylout, A. Pistillo, C.Y. Yang, G. Rebetez, P. Cavassin, B. Jismy, J. Réhault, S. Fabiano, M. Brinkmann, N. Leclerc, N. Banerji\*, [Advanced Materials 2025, 37, 2420323](#)

2. *Versatile Direct (Hetero)Arylation Polymerization of Electro-Deficient Unsubstituted Thiazolo[5,4-d]Thiazole: A Tool to Lower the LUMO Level*, B. Jismy, P. Durand, J. P. Jacob, F. Richard, O. Boyron, B. Heinrich, B. Schmaltz, P. Lévêque, **O. Bardagot**, N. Leclerc, [\*Macromolecular Rapid Communications\* \*\*2025\*\*, \*46\*, 2500243](#).
3. *Improvement of semiconducting and thermomechanical properties of polymer materials based on polypyrrole and polyvinylpyrrolidone*, K. Zeggagh, S. Atia, M. Trari, T. Dintzer, C. Mélart, P. Lévêque, **O. Bardagot**, Z. Benabdelghani, [\*Journal of Materials Science\* \*\*2025\*\*, \*60\*, 6565–6580](#)
4. *Balancing Electroactive Backbone and Oligo(Ethylene Oxy) Side-Chain Content Improves Stability and Performance of Soluble PEDOT Copolymers in Organic Electrochemical Transistors*, **O. Bardagot\***, B. T. DiTullio, A. L. Jones, J. Speregen, J. R. Reynolds, N. Banerji, [\*Advanced Functional Materials\* \*\*2025\*\*, \*35\*, 2412554](#)
5. *Controlling conjugated polymer morphology by precise oxygen position in single-ether side chains*, P. Durand, H. Zeng, B. Jismy, O. Boyron, B. Heinrich, L. Herrmann, **O. Bardagot\***, I. Moutsios, A. V. Mariasevskaya, A. P. Melnikov, D. A. Ivanov, M. Brinkmann\*, N. Leclerc\*, [\*Materials Horizons\* \*\*2024\*\*, \*11\*, 4737–4746](#)
6. *Interplay between Side Chain Density and Polymer Alignment: Two Competing Strategies for Enhancing the Thermoelectric Performance of P3HT Analogues*, P. Gilhooly-Finn, I. Jacobs, **O. Bardagot**, Y. Aziz-Zaffar, A. Lemaire, S. Guchait, L. Zhang, M. Freeley, W. Neal, F. Richard, M. Palma, N. Banerji, H. Sirringhaus, M. Brinkmann, C. Nielsen, [\*Chemistry of Materials\* \*\*2023\*\*, \*35\*, 9029–9039](#)
7. *Effect of a benzothiadiazole spacer on transport properties and N-doping of naphthalene-diimide-based copolymers*, **O. Bardagot\***, Y. Kervella, A. A. Medjahed, S. Pouget, T. N. Domschke, A. Carella, C. Aumaître, P. Lévêque, R. Demadrille\*, [\*Journal of Materials Chemistry C\* \*\*2023\*\*, \*11\*, 14108–14118](#)
8. *Electrochemical Doping in Ordered and Disordered Domains of Organic Mixed Ionic–Electronic Conductors*, P. Cavassin, I. Holzer, D. Tsokkou, **O. Bardagot**, J. Réhault, N. Banerji, [\*Advanced Materials\* \*\*2023\*\*, \*35\*, 2300308](#) – back cover
9. *Effects of Side-Chain Length and Functionality on Polar Poly(dioxythiophene)s for Saline-Based Organic Electrochemical Transistors*, B. T. DiTullio, L. R. Savagian, **O. Bardagot**, M. De Keersmaecker, A. M. Österholm, N. Banerji, J. R. Reynolds. [\*Journal of the American Chemical Society\* \*\*2023\*\*, \*145\*, 122-134](#)

10. *What Drives the Kinetics and Doping Level in the Electrochemical Reactions of PEDOT:PSS?* G. Rebetez, **O. Bardagot**, J. Affolter, J. Réhault, N. Banerji, [Advanced Functional Materials 2022, 32, 2105821](#)
11. *The effect of residual palladium on the performance of organic electrochemical transistors*, S. Griggs, A. Marks, D. Meli, G. Rebetez, **O. Bardagot**, B. D. Paulsen, H. Chen, K. Weaver, M. I. Nugraha, E. A. Schafer, J. Tropp, C. M. Aitchison, T. D. Anthopoulos, N. Banerji, J. Rivnay, I. McCulloch, [Nature Communications 2022, 13, 7964](#)
12. *Spectroscopic tools to investigate the electrochemical doping kinetics and efficiency in organic semiconductors*, **O. Bardagot**, N. Banerji, [CHIMIA 2022, 76, 546–546](#)
13. *Deep Transfer Learning: A Fast and Accurate Tool to Predict the Energy Levels of Donor Molecules for Organic Photovoltaics*, G. J. Moore, **O. Bardagot**, N. Banerji, [Advanced Theory and Simulations 2022, 5, 2100511](#)
14. *Hidden surface photovoltages revealed by pump probe KPFM*, V. Aubriet, K. Courouble, **O. Bardagot**, R. Demadrille, L. Borowik, B. Grévin, [Nanotechnology 2022, 33, 225401](#)
15. *Revisiting doping mechanisms of n-type organic materials with N-DMBI for thermoelectric applications: Photo-activation, thermal activation, and air stability*, **O. Bardagot\***, C. Aumaître, A. Monmagnon, J. Pécaut, P.-A. Bayle, R. Demadrille\*, [Applied Physics Letters 2021, 118, 203904](#)
16. *Non-Fullerene Acceptors with an Extended  $\pi$ -Conjugated Core: Third Components in Ternary Blends for High-Efficiency, Post-Treatment-Free Organic Solar Cells*, Y. A. Avalos-Quiroz, **O. Bardagot**, Y. Kervella, C. Aumaître, L. Cabau, A. Rivaton, O. Margeat, C. Videlot-Ackermann, U. Vongsaysy, J. Ackermann, R. Demadrille, [ChemSusChem 2021, 14, 3502–3510](#) – front cover
17. *Impact of Morphology on Charge Carrier Transport and Thermoelectric Properties of N-Type FBDOPV-Based Polymers*, **O. Bardagot**, P. Kubik, T. Marszalek, P. Veyre, A. A. Medjahed, M. Sandroni, B. Grévin, S. Pouget, T. N. Domschke, A. Carella, S. Gambarelli, W. Pisula, R. Demadrille, [Advanced Functional Materials 2020, 30, 2000449](#)
18. *Implementation of Data-Cube Pump–Probe KPFM on Organic Solar Cells*, B. Grévin, **O. Bardagot**, R. Demadrille, [Beilstein Journal of Nanotechnology 2020, 11, 323–337](#)
19. *Unraveling the Mechanism behind Air Instability in Thin Semiconducting Polymer Layers P-Doped with Molybdenum Dithiolene Complexes*, T. Nunes Domschke, **O. Bardagot**, A. Benayad, R. Demadrille, A. Carella, R. Clerc, A. Pereira, [Synthetic Metals 2020, 260, 116251](#)
20. *Visible and Near-Infrared Organic Photosensitizers Comprising Isoindigo Derivatives as Chromophores: Synthesis, Optoelectronic Properties and Factors Limiting Their Efficiency in*

*Dye Solar Cells*, C. Aumaitre, C. Rodriguez-Seco, J. Jover, **O. Bardagot**, F. Caffy, Y. Kervella, N. López, E. Palomares, R. Demadrille, [Journal of Materials Chemistry A 2018, 6, 10074–10084](#)

## AWARDS

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**April 2024** Prize of the Materials Horizons journal (RSC) at the international conference SPIE 2024 for "[his exceptional contribution to the Women in Renewable Energy workshop](#)"

## PANELS AND BOARDS

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**Since 2025** Steering committee of the international conference [SPIE Optics + Photonics](#), symposium Physical Chemistry of Semiconductor Materials and Interfaces, San Diego (USA).

**Since 2024** Member of the steering committee of the international conference [Neuromorphic Organic Devices](#), and co-organizer of the NOD2024 edition in Paris

**Nov 2024** Co-organizer of the international conference [MATSUS Fall Meeting – Organic Mixed Ionic-Electronic Conductors symposium](#) in Lausanne, Switzerland

**Since 2023** Gender equality referent at ICPEES (UN goal 5) – volunteer mission supported by the CNRS to promote equality and fight against all forms of discrimination.

**Since 2021** Review editor for Thermoelectric Materials of [Frontiers in Electronic Materials](#)

**Since 2021** Reviewer for Advanced Materials (IF = 26.8), Advanced Energy Materials (IF = 26.0), Nature Chemistry (IF = 20.2), Science Advances (IF = 12.5), ACS Materials Letter (IF = 8.7), Macromolecules (IF = 5.2), Journal of Materials Chemistry C (IF = 5.1), The Journal of Physical Chemistry Letters (IF = 4.6), Applied Spectroscopy (IF = 2.2), etc (source: [ORCID](#)).

## ORAL COMMUNICATIONS

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**23/10/2025** **Invited talk** – [MATSUS Fall 2025](#), Valencia, Spain  
Organic Electrochemical Transistors – Materials and Device Properties  
*Anisotropic channels: a universal method to enhance OECT performance?*,  
**O. Bardagot**

**05/08/2025** **Invited talk** – [SPIE 2025](#), San Diego, USA  
Physical Chemistry of Semiconductor Materials and Interfaces XXIV symposium

*Engineering High-Performance Organic Mixed Conductors and Functionalizing the Gate Electrode for Bilirubin Sensing, **O. Bardagot***

- 03/08/2025** **Invited talk** – [SPIE 2025](#), San Diego, USA  
Organic and Hybrid Transistors XXIV symposium  
*Key criteria for the design and processing of mixed ionic-electronic conductors for record-performance organic electrochemical transistors, **O. Bardagot***
- 20/01/2025** [SPIC 2025](#), Paris, France  
*How to control the microstructure of doped polymer films using side-chain engineering for thermoelectricity and organic electrochemical transistors, **O. Bardagot***
- 12/11/2024** **Invited talk** – [MATSUS Fall 2024](#), Lausanne, Switzerland  
*Electroactive polymer content: a tool to design the side chains of next-generation OMIECs, **O. Bardagot**, B. DiTullio, A. Jones, J. Speregen, J. Reynolds, N. Banerji*
- 13/10/2024** **Invited talk** – [NOD 2024](#), Paris, France  
*Balancing Electroactive Backbone and Oligo(Ethylene Oxy) Side-Chain Content Improves Stability and Performance of Soluble PEDOT Copolymers in Organic Electrochemical Transistors, B. DiTullio, A. Jones, J. Speregen, J. Reynolds, N. Banerji, **O. Bardagot***
- 29/05/2024** [E-MRS Spring Meeting 2024](#), Strasbourg, France  
*Novel polar single-ether side chains for high-performing doped materials, P. Durand, B. Jismy, S. Guchait, B. Heinrich, D. Ivanov, N. Banerji, M. Brinkmann, N. Leclerc, **O. Bardagot***
- 08/04/2024** **Invited panelist** – Round table discussion, [Women in Renewable Energy \(WiRE\) workshop](#) SPIE 2024, Strasbourg, France  
*The role of women scientists in renewable energy*
- 13/10/2023** **Invited talk** – [GDR OERA](#), Marseille, France  
*How morphology controls electrochemical doping and how to achieve record performance in organic electrochemical transistors (OECTs), **O. Bardagot**, P. Cavassin, P. Durand, S. Guchait, I. Holzer, D. Tsokkou, G. Rebetez, J. Réhault, M. Brinkmann, N. Leclerc, N. Banerji.*
- 30/08/2023** **Invited talk** – STELORG mini-symposium, Strasbourg, France  
*How to design polymers for high performance organic electrochemical transistors (OECTs)? **O. Bardagot***
- 26/11/2022** [MRS Fall Meeting 2022](#), Boston, USA  
*Uniaxial Alignment of Polymer Chains: a Versatile Strategy to Achieve Faster Switching and Higher Performing Organic Electrochemical Transistors (SB06.08.03), **O. Bardagot**, P. Durand, S. Guchait, G. Rebetez, M. Brinkmann, N. Leclerc, N. Banerji.*

- 13/09/2022**    **Invited talk** – [USIAS Symposium](#), ICS, Strasbourg, France  
*Doping Mechanisms of Organic Mixed Ionic-Electronic Conductors: Spectral deconvolution, THz spectroscopy and Uniaxial Polymer Alignment*, **O. Bardagot**, G. Rebetez, D. Tsokkou, P. Durand, S. Guchait, J. Réhault, M. Brinkmann, N. Leclerc, N. Banerji.
- 04/04/2022**    [SPIE Photonics Europe](#), Strasbourg, France  
*Absorbance spectra deconvolution and THz spectroscopy: tools to access fundamental mechanisms limiting the development of bioelectronic and energy storage devices (PC12149)*, **O. Bardagot**, G. Rebetez, P. Cavassin, J. Réhault, N. Banerji.
- 02/12/2021**    **Invited talk** - Department seminar, ICPEES, Strasbourg, France  
*Let's play Pictionary: molecules for energy harvesting and bioelectronics*, **O. Bardagot**.
- 02/06/2021**    [E-MRS Spring Meeting](#), Strasbourg (online)  
*Mixed polar/ionic side chain copolymers open the doors to faster electrochemical devices (C.3.2)*, **O. Bardagot**, S. Govaerts, G. Rebetez, P. Cavassin, F. Schneider, J. Réhault, W. Maes, N. Banerji.
- 20/04/2021**    [MRS Spring Meeting 2021](#), Boston, USA (online)  
*Next-generation Organic Mixed Ionic-electronic Conductors: a Dynamic Study on Copolymers for Faster Electrochemical Devices (EL01.12.01)*, **O. Bardagot**, S. Govaerts, G. Rebetez, P. Cavassin, F. Schneider, J. Réhault, W. Maes, N. Banerji.

## MAJOR COLLABORATIONS

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|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| Nicolas Leclerc   | ICPEES, Strasbourg, France                                |
| Natalie Banerji   | University of Bern, Bern, Switzerland                     |
| Martin Brinkmann  | ICS, Strasbourg, France                                   |
| Renaud Demadrille | CEA Grenoble, Grenoble, France                            |
| Patrick Lévêque   | iCube, Strasbourg, France                                 |
| Wojciech Pisula   | Max Planck Institute for Polymer Research, Mainz, Germany |
| Wouter Maes       | University of Hasselt, Hasselt, Belgium                   |
| Christian Nielsen | Queen Mary University of London, London, UK               |
| Iain McCulloch    | University of Oxford, Oxford, UK                          |
| Simone Fabiano    | Linköping University, Norrköping, Sweden                  |
| Natalie Stingelin | Georgia Institute of Technology, Atlanta, USA             |
| John Reynolds     | Georgia Institute of Technology, Atlanta, USA             |

## REFERENCES

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Postdoctoral supervisor: **Prof. Natalie Banerji** | 2020 – 2023

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PhD supervisor: **Dr. Renaud Demadrille** | 2016 – 2019

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