



PERSONAL INFORMATION

Family name, First name: Bonduelle, Colin
ORCID identifier: 0000-0002-7213-7861
Date of birth: 25/02/1980
Nationality: French
URL for web site: <https://www.lcpo.fr/people/faculties/colin-bonduelle>
Google Scholar profile URL: <https://scholar.google.com/citations?user=BLAI3ooAAAAJ&hl=en>
Publons: <https://publons.com/researcher/1614044/colin-bonduelle/>

EDUCATION

2018 *Habilitation thesis (HDR)* of the University of Toulouse (defended publicly on 16/11/2018).
2009 *PhD* in Molecular Chemistry, University of Toulouse, France.
2005 *Masters* in Biochemistry and Chemical Biology, University of Toulouse, France.

CURRENT POSITION

2019-present *CNRS researcher and thematic leader* (NCA chemistry, polypeptides and ring-opening polymerization) at Lab. Organic Polymer Chemistry (LCPO), CNRS, Pessac, France.

PREVIOUS POSITIONS

2014-2018 *CNRS researcher* at Lab. Coordination Chemistry (LCC), CNRS, Toulouse, France.
Topic: Secondary structures of polypeptide polymers
2011-2014 *Post-doctoral fellow* at LCPO, University of Bordeaux, Pessac, France.
Topic: Nanomaterials through polypeptide self-assembly
2009-2011 *Post-doctoral fellow* at Dept. of Chemistry, University of Western Ontario, Canada.
Topic: Macromolecular grafting and biomaterials
2005-2009 *Grad. student* at Lab. Fundamental and Applied Heterochemistry (Supervision of Dr. Didier Bourissou), University of Toulouse, France.
Topic: Ring-opening polymerization and biodegradable polymers.

FELLOWSHIPS GRANTS AND AWARDS

2020-present **Young Habilitant Grant recipient:** Sequence-controlled polypeptide copolymers, 120 k€. **Young researchers grant (French ANR)** "Ring-Opening Polymerization-Induced Self-Assembly", ROPISA, 210 k€.
2017 **Patent issued award**, 2017 Vanguard Awards Winners, Worlddiscoveries, London, ON, Canada.

Other grants (all as PI):

- CSC grant (2021-2024): *Chinese PhD fellowship* on photo-active polypeptide polymers.
- AST grant (technology transfer): *Development Engineer* (18 months) on ROPISA (2021, 180 k€).
- CNRS MITI funding: *Running costs* (2020-2021, polypeptide-based nanocomposites, 15 k€).
- ECOS funding (UNAM- University of Bordeaux): *Travel exchanges with Mexico* to support the project POLYMERZYME (2020, enzyme like catalysis with polypeptides, about 20 k€).
- Conacyt grant (2017-2021): *Mexican PhD fellowship* on antimicrobial polypeptoid polymers.
- Occitanie Region research funding: 1) *PhD fellowship* on "Self-assembly by coordination of peptidic homopolymers" (2017, 120 k€). 2) *Post-doc fellowship* on "metal induced structuring of polypeptide" (2016, 60 k€).

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

Postdocs

2021-present S. Antoine, post-doc since February (technology transfer)
2016 M. NGuyen, post-doc now research engineer at Lab. LCC, Toulouse, France.
2015 E. Piedra-Arroni, post-doc now teaching assistant.

PhD students

2021-present S. Ji, PhD student since March, co-supervision
2020-present M. Badreldin, PhD student in 1st year
2018-present A. Tronnet, PhD student in 3rd year, co-supervision (will defend in December 2021)
2017-present P. Salas-Ambrosio, PhD student in 4th year (will defend in July 2021).
2017-2020 G. Manai, PhD student, co supervised, now looking for a post-doc.

MSc students

2014-present **9 Masters students:** 6 at LCC, Toulouse, France and 3 at LCPO, Pessac, France.

TEACHING ACTIVITIES

- 2014-2018 **6h/year in Pharmacy.** Faculty of Pharmacy of Toulouse: Master 1 course "initiation to peptide synthesis"
2006-2008 **64h/year in Chemistry.** University of Toulouse: Licence and Master practical lab classes.

ORGANISATION OF SCIENTIFIC MEETINGS

- 2019-present **Organizer** (seminar officer) of internal seminars at LCPO (every weeks). This includes invited external seminars (15 foreign scientific leaders/year)
2018 **Organizing committed:** GFP National Meeting (Polymer sciences), November 2018, Toulouse, France.
2011-present **Participation in the organization of scientific days** (LCPO and LCC): IUPAC consortium (2011-2013), chemistry-biology days (Toulouse doctoral school, 2015-2017), Bordeaux doctoral school days (2020) etc.

INSTITUTIONAL RESPONSIBILITIES

- 2021 **Member**, BQR funding committee, University of Perpignan, France
2016-present **2 PhD defense committees** including one at the University of Birmingham.
2015-2018 **Elected member** of the LCC laboratory Council, Toulouse, France.
2021-present **Elected member** of the LCPO laboratory Council, Pessac, France.

COMMISSIONS OF TRUST (amount of evaluation)

- 2020 **Expert evaluator** for the Academy of Sciences of the Czech Republic (scientific evaluation of research career, 15)
2014-present **Grant evaluator:** national research agency (ANR, 4; ANRT, 1), CONACYT, research agency in Mexico (5). COFECUB international council (1), MSC-IF call (H2020) (4).

PEER REVIEW

- 2014-present **Reviewer for:** Nat. Commun., Angew. Chem., Biomacromolecules etc... 93 verified reviews on publons

OUTREACH AND POPULARIZATION

- My research on polypeptides has been highlighted by the CNRS (Institute of Chemistry and in French) through 3 recent press releases (<https://www.inc.cnrs.fr/fr/cnrsinfo/une-synthese-et-un-auto-assemblage-verts-pour-les-polypeptides>, <https://inc.cnrs.fr/fr/cnrsinfo/un-nouveau-concept-de-fabrication-de-nano-materiaux-hybrides-par-auto-assemblage> and <https://inc.cnrs.fr/fr/cnrsinfo/des-polymeres-cycliques-contre-les-infections-clostridioides-difficile>).
- I also took an active part in popularization actions (fête de la sciences etc...) by getting involved, in particular, with the chemistry and society association (caravane de la chimie, 2018).

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

- 2018-present Partner Member of the international laboratory LCMMC (Scientific exchanges and collaborative efforts France/Mexico).
2014-present ACS and GFP (Groupe Français des Polymères) membership.

MAJOR COLLABORATIONS

- B. Dupuy, Polypeptoid polymers against C. difficile infections
Institut Pasteur, Paris, France.
- J.L. Stigliani, Secondary structure of polypeptide through molecular modelling
Lab. LCC, CNRS, Toulouse, France.
- Simon Tricard, Polypeptide-based nanocomposites
Lab. Physico-Chemistry of Nano-objects, Toulouse, France.
- Jing Sun, Polypeptoids polymers and self-assembly
College of Polymer Science and Engineering, Qingdao University, China.
- Marcela Ayala, Artificial metalloenzymes through ring-opening polymerization
Instituto de Biotecnología, UNAM, Mexico.
- S. Guillaume, Yttrium-based catalysis for ring-opening polymerization
Institut des Sciences Chimiques, Rennes, France.
- M. Grinstaff, glycopolymer in ROPISA
Boston University, USA.

CAREER BREAKS

- 2016/2017 - Parental leave taken for my daughter (4 months)

2. REPRESENTATIVE PUBLICATIONS

To date I have published 46 papers in peer-review journals.

10 selected publications (all corresponding or joint corresponding author – see *):

1. “Cyclic poly(α -peptoid)s by lithium bis(trimethylsilyl)amide (LiHMDS)-mediated ring-expansion polymerization: simple access to bioactive backbones” P. Salas-Ambrosio, A. Tronnet, M. Since, S. Bourgeade-Delmas, J.L. Stigliani, A. Vax, S. Lecommandoux, B. Dupuy, P. Verhaeghe, * C. Bonduelle* *J. Am. Chem. Soc.* **2021**, 143, 3697.
Featured on the Cover.
2. “Synthetic polypeptide polymers as simplified analogues of antimicrobial peptides” P. Salas-Ambrosio, A. Tronnet, P. Verhaeghe, C. Bonduelle* *Biomacromolecules* **2021**, 22, 57.
Featured on the Cover.
3. “Bidimensional lamellar assembly by coordination of peptidic homopolymers to platinum nanoparticles” G. Manai, H. Houimel, M. Rigoulet, A. Gillet, P.F. Fazzini, A. Ibarra, S. Balor, P. Roblin, J. Esvan, Y. Coppel, B. Chaudret, C. Bonduelle, * S. Tricard* *Nature Commun.* **2020**, 11, 2051.
Editors' highlight: <https://www.nature.com/collections/wdzvyhgxf/content/johannes-kreutzer>
4. “Aqueous ring-opening polymerization induced self-assembly (ROPISA) of *N*-carboxyanhydrides” C. Grazon, P. Salas-Ambrosio, E. Ibarboure, A. Buol, E. Garanger, M. Grinstaff, S. Lecommandoux, * C. Bonduelle* *Angew. Chem. Int. Ed.* **2020**, 59, 622.
VIP Paper featured on the Cover.
5. “Amphiphilic nucleobase-containing polypeptide copolymers—Synthesis and self-assembly” M. Nguyen, K. Ferji, S. Lecommandoux, C. Bonduelle* *Polymers* **2020**, 12, 1357.
6. “Ionic polypeptide polymers with unusual β -sheet stability” M. Nguyen, J.L. Stigliani, C. Bijani, P. Verhaeghe, G. Pratviel, C. Bonduelle* *Biomacromolecules* **2018**, 19, 4068.
7. “Cd²⁺ coordination: an efficient structuring switch for polypeptide polymers” J. Aujard-Catot, M. Nguyen, C. Bijani, G. Pratviel, C. Bonduelle* *Polym. Chem.* **2018**, 9, 4100.
Featured on the Cover.
8. “Secondary structures of synthetic polypeptide polymers” C. Bonduelle* *Polym. Chem.* **2018**, 9, 1517.
Contribution to the emerging investigator issue 2018.
9. “Nucleopolypeptides with DNA-triggered α -helix-to- β -sheet transition” M. Nguyen, J.L. Stigliani, G. Pratviel, C. Bonduelle* *Chem. Commun.* **2017**, 53, 7501.
10. “Smart poly(imidazolyl-*L*-lysine): synthesis and reversible helix-to-coil transition at neutral pH” E. Piedra-Aroni, F. Makni, J.L. Stigliani, G. Pratviel, C. Bonduelle* *Polymers* **2017**, 276, 1-7.

3. PATENTS

- 1) “Antimicrobial cationic peptoid and *N*-substituted peptidic copolymers, preparation and uses thereof” C. Bonduelle, P. Verhaeghe, B. Dupuy, P. Salas-Ambrosio, A. Tronnet Patent application EP21305198.0.
- 2) “Method for preparing controlled peptide-based copolymers in an aqueous solution” C. Bonduelle, S. Lecommandoux, E. Garanger, C. Grazon Patent Application WO2021043865.
- 3) “Methods for preparation of novel graft copolymers” E. Gilles, C. Bonduelle, G. Stojcevic, Patent Application WO2012019302.
- 4) “Functionalized copolymers of isoolefins and diolefins and their use as compatibilizers” E. Gillies, C. Bonduelle, G. Stojcevic, Patent Application WO2012019303.

4. INVITED PRESENTATIONS

‘Invited Lectures at major Conferences and Symposia’.

1. “Cyclic poly(peptoids) as promising antimicrobial agents” Invited speaker at the Polymers and nanopolymers: chemistry, characterization and applications symposium, IMRC (MRS) | XXIX 2021, Online Conference, Mexico (August 16-18, **2021**).
2. “Amphiphilic polypeptides through aqueous ROPISA process” Invited speaker at the Soft Materials in Nanomedicine symposium, IUPAC | CCCE 2021, the 48th World Chemistry Congress and 104th Canadian Chemistry Conference and Exhibition, Online Conference, Canada (August 13-14, **2021**).
3. “Ring-Opening Polymerization-Induced Self-Assembly of *N*-carboxyanhydrides” Invited speaker at the Bio-inspired Macromolecular Materials symposium (PMSE), ACS Spring 2021 National Meeting (virtual), Online Conference, USA (April 5-8, **2021**).
4. “Synthetic polypeptides polymers: secondary structures and self-assembly” Invited speaker at the International Conference on Polymers and Advanced Materials, POLYMAT 2019, Huatulco, Mexico (October 20-25, **2019**).

5. *"Synthetic polypeptides as simplified analogues of conjugated proteins"* Invited speaker at the 8th International Symposium on Polymer Chemistry, PC2018, Changchun, China (June 6-9, **2018**).
6. *"Synthetic polypeptides as biomimetic analogues of natural proteins"* Invited speaker (Plenary session) at the JEPO congress of 2016, Piriac sur Mer, France (September 19-22, **2016**).

'Invited Seminars at Leading Institutions' (15 invited seminars including 8 international). The last 3:

1. *"Secondary structuring in polypeptide polymers"* ETH Zurich, Department of Mechanical and Process Engineering, Zurich, Switzerland (November 21, **2019**)
2. *"Stimuli-responsive structuring in polypeptide polymers"* Université de Lille, Unité Matériaux et Transformations (UMET), Lille, France (April 9, **2019**)
3. *"DNA and metal-responsive polypeptide polymers"* Universidad Nacional Autónoma de México, Instituto de Investigaciones en Materiales-UNAM, Ciudad de México, México (January 8, **2019**)