



Dr. Jean-Philippe BOUILLON



Professor, Rouen Normandie University
Fluorinated Biomolecules Synthesis Team

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PROFESSIONAL EXPERIENCES

- 2004- Professor in Organic Chemistry, Rouen University, France.
- 1996-2004 CNRS researcher in Organic Chemistry, UMR 6519: Réaction Sélectives et Applications, Université de Reims Champagne-Ardenne, France, Laboratory: Pr. C. Portella.
- 1995-1996 Postdoctoral position, LEDSS III - Chimie recherche, Université Joseph Fourier, France, Laboratory: Dr. A. Greene.
- 1994-1995: Postdoctoral position, Institut de Chimie des Substances Naturelles, CNRS, France, Laboratory: Pr. P. Potier, Dr. J. Zhu.

EDUCATION

- 2002 « Habilitation à Diriger des Recherches », Université de Reims Champagne Ardenne, France.
- 1989-2004 PhD Thesis, Organic Chemistry, Université Catholique de Louvain (Louvain-la-Neuve, Belgium).
- 1985-1989 "Licence" (diploma similar to a Honors BSc), Université Catholique de Louvain (Belgium).

ADMINISTRATIVE & INSTITUTIONAL RESPONSIBILITIES

- 2019 Responsible of Master Chemistry, Univ. Rouen
- 2016 Elected member of Academic Councils for Research, Univ. Rouen
- 2012-2017 Master 2 Supervisor, "Chemistry and Physical Chemistry of Drugs", University of Rouen
- 2010-2016 Elected member of Academic Councils for Teaching, Univ. Rouen
Member of « Grand Réseau de Recherche » (GRR Haute Normandie : Chimie Biologie Santé) et LABEX SYNORG

RESEARCH INTERESTS

- Development of fluorinated building blocks (perfluoroketene dithioacetals, F or CF₃-acrylates and acrylic acids)
- New methodologies in Organofluorine Chemistry (Diels-Alder and Hetero Diels Alder reactions, introduction of SF₅ substituent into nitrogen containing heterocycles)
- Synthesis of fluorinated heterocycles and their applications in Medicinal Chemistry (antimalarial agents, 5-HT₄ serotonergic receptors, phosphodiesterase PDE₄ inhibitors)

SCIENTIFIC ACHIEVEMENTS

Academic record (h-index: 15)

128 publications, 6 books/book chapters, 3 patents, 5 invited lectures, 65 seminars

SUPERVISION ACTIVITIES

PhD supervision: 12 thesis, 5 currently in progress (Labex SYNORG, CRUNCH, Région Normandie)

Posdoc supervision: 13 at Reims and Rouen Universities

GRANTS AND FELLOWSHIPS

2016-2020: Patent application: Synthesis of CF₃-pyridazin-3-ones as phosphodiesterase PDE4 inhibitors for Asthma and Mucoviscidosis treatment (collaboration: Dr. S. Gérard, Reims). Patent PCT 2016

2012-2014: ANR-11-EMMA-04-QUINOLAC: Synthesis of mixed aminoquinolines lactams and their evaluation as antimalarial agents (collaboration: Dr. M. Médebielle, Lyon). Patent PCT 2012

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2015, 2019: President ou Vice-president of the Regional Board (Normandie Region) of the French Chemical Society.

CONFERENCES (2016-2020)

C73) « Ligand free palladium-catalyzed synthesis of α -trifluoromethyl-acrylates and acrylic acids, and some applications », Institute of Organic Chemistry and Biochemistry, Katholieke Universiteit Leuven, Belgium, 04 Mars 2020 (séminaire, invitation : Pr. W. DeHaen).

C72) « Synthesis, properties and some applications of fluorinated compounds », University College Leuven-Limburg, Belgium, 03 Mars 2020 (séminaire, invitation : Dr. L. Jacoby).

C71) « Palladium-catalyzed directed introduction of \odot -CF₃-vinyl group by C-H bond functionalization », Hangzhou Normal University, Hangzhou, China, 16 Juin 2018 (séminaire, invitation : Prof. Xu).

C70) « Synthesis of SF₅-pyrrolidines based on 1,3-dipolar cycloadditions with SF₅-acrylic derivatives », Shanghai Chinese Traditional Medical University, Shanghai, China, 15 Juin 2018 (séminaire, invitation : Prof. Ping).

C69) « Synthesis of SF₅-pyrrolidines based on 1,3-dipolar cycloadditions with SF₅-acrylic derivatives », Fudan University, Shanghai, China, 15 Juin 2018 (séminaire, invitation : Prof. Lei).

C68) « Synthesis of CF₃-vinylstyrenes and CF₃-buta-1,3-dienes by palladium-catalyzed directed introduction of \odot -CF₃-vinyl group », Shanghai Institute of Organic Chemistry, Shanghai, China, 14 Juin 2018 (séminaire, invitation : Prof. Hu).

C67) « Synthesis of SF₅-pyrrolidines based on 1,3-dipolar cycloadditions with SF₅-acrylic derivatives », Nanjing Normal University, College of Chemistry and Materials Science, Nanjing, China, 13 Juin 2018 (séminaire, invitation : Prof. Liu et du Prof. Sun).

C66) « Synthesis of fluorinated mixed aminoquinoline lactam derivatives – Application as potential anti-malarial agents », Institute of Medical Materials, Benjing, China, 11 Juin 2018 (séminaire, invitation : Prof. Yu).

C65) « Introduction directe du groupement \odot -CF₃-vinyl par fonctionalisation de la liaison C(sp²)-H catalysée par le palladium », Université de Reims Champagne-Ardenne, ICMR, 15 Mai 2018 (séminaire, invitation : Dr. S. Gérard).

C64) « Palladium-catalyzed directed introduction of \odot -CF₃-vinyl group by C-H bond functionalization », Institute of Organic Chemistry and Biochemistry, Katholieke Universiteit Leuven, Belgium, 08 Mars 2018 (séminaire, invitation : Pr. W. DeHaen, Pr. E. Van DerEicken).

C63) « Synthesis of $\odot\odot\odot$ -unsaturated carbonyl derivatives», University College Leuven-Limburg, Belgium, 06 Mars 2018 (séminaire, invitation : Dr. L. Jacoby, Dr. H. Faes).

C62) « Synthesis of SF₅-heterocycles based on 1,3-dipolar cycloadditions », Laboratory of Organosilicon Chemistry and Material Technology, Hangzhou Normal University, Hangzhou, China, 28 Août 2017 (séminaire, invitation : Pr. L.-W. Xu).

C61) « Synthesis of SF₅-heterocycles based on 1,3-dipolar cycloadditions », College of Biotechnology and Pharmaceutical Engineering, Nanjing University of Technology, Nanjing, China, 27 Août 2017 (séminaire, invitation : Pr. S. Han & Pr. Z. Li).

C60) « Synthesis of fluorinated mixed aminoquinoline lactam derivatives – Application as potential anti-malarial agents », Fudan University, Shanghai, China, 26 Août 2017 (séminaire, invitation : Dr. X. Lei).

C59) « Synthesis of SF₅-heterocycles based on 1,3-dipolar cycloadditions », Laboratory of Organofluorine Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai, China, 25 Août 2017 (séminaire, invitation : Pr. J. Hu).

C58) « Synthesis of fluorinated mixed aminoquinoline lactam derivatives – Application as potential anti-malarial agents », Institute of Pharmaceutical Innovation, Shanghai Institute of Technology, Shanghai, China, 24 Août 2017 (séminaire, invitation : Pr. F.-H. Wu).

C57) « Synthesis of nitrogen containing heterocycles starting from perfluoroketene dithioacetals and α -ketothioesters », Ghent University, Belgium, 09 Mars 2017 (séminaire, invitation : Pr. C. Stevens).

C56) « Bromofluoroalkenes and fluoroacrylates: two key building blocks towards the functionalization of aryl and heteroaryl derivatives », Institute of Organic Chemistry and Biochemistry, Katholieke Universiteit Leuven, Belgium, 08 Mars 2017 (séminaire, invitation : Pr. W. DeHaen).

C55) « Synthesis, properties and some applications of fluorinated molecules », University College Leuven-Limburg, Belgium, 07 Mars 2017 (cours Erasmus bachelor degree, invitation : Dr. L. Jacoby, Dr. H. Faes).

C54) « Fluorinated mixed aminoquinoline lactam derivatives as Chloroquine-based drugs for the treatment of malaria », Karlstad University, Suède, 26 novembre 2016 (séminaire, invitation : Pr. J. van Stam)

C53) « Discussion of few examples of fluorinated biologically active compounds », Karlstad University, Suède, 24 novembre 2016 (cours Erasmus bachelor degree, invitation : Pr. J. van Stam)

C52) « Synthesis and properties of fluorinated molecules », Karlstad University, Suède, 23 novembre 2016 (cours Erasmus bachelor degree, invitation : Pr. J. van Stam)

C51) « Synthesis of SF₅-building blocks – Development of new approaches to SF₅-nitrogen containing heterocycles », Université de Reims Champagne Ardennes, 06 octobre 2016 (séminaire, invitation: Pr. J. Sapi, Dr. S. Gérard).

C50) « Synthesis of fluorinated mixed aminoquinoline lactams – biological evaluation as possible anti-malarial agents », 7th French-Czech Vltava Chemistry Meeting, Orléans, 05-06 septembre 2016 (conférence plénière).

C49) « Synthesis and properties of α,β -unsaturated carbonyl derivatives », Brno University Technology, République Tchèque, 21 Avril 2016 (cours Erasmus bachelor degree, invitation : Pr. M. Potacek)

C48) « New synthetic approaches to aryl and heteroaryl compounds by Mizoroki-Heck reaction and C-H bond functionalization », Brno University Technology, République Tchèque, 20 Avril 2016 (séminaire, invitation : Dr. J. Krajkovic)

C47) « Synthesis of SF₅-building blocks – Development of synthetic approaches to new SF₅-nitrogen containing heterocycles », Masaryk University Brno, République Tchèque, 19 Avril 2016 (séminaire, invitation: Pr. M. Potacek).

C46) « Bromofluoroalkenes and fluoroacrylates as key building blocks towards the functionalization of aryl and heteroaryl derivatives », Institute of Organic Chemistry and Biochemistry, Academy of Sciences of Czech Republic, Prague, République Tchèque, 18 Avril 2016 (séminaire, invitation : Dr. P. Beier).

C45) « New synthetic approaches for the introduction of SF₅-group into pyrrolidines and isoxazolidines», Katholieke Universiteit Leuven, Belgium, 09 Mars 2016 (séminaire, invitation : Pr. W. DeHaen).

C44) « Synthesis and reactivity of α,β -unsaturated carbonyl derivatives », University College Leuven-Limburg, Belgium, 08 Mars 2016 (cours Erasmus bachelor degree, invitation : Dr. L. Jacoby).

PUBLICATIONS (2016-2020)

128) T. Brégent, J.-P. Bouillon, T. Poisson, Copper-Photocatalyzed Contra-Thermodynamic Isomerization of Polarized Alkenes, *Org. Lett.*, 22, 7688–7693 (2020), DOI: 10.1021/acs.orglett.0c02894

127) K. E. Soklou, H. Marzag, J.-P. Bouillon, M. Marchivie, S. Routier, K. Plé, Gold(I)-Catalyzed Intramolecular Hydroamination and Hydroalkoxylation of Alkynes: Access to Original Heterospirocycles, *Org. Lett.*, 2020, DOI:10.1021/acs.orglett.0c02070.

126) P. Xiao, C. Schlinquer, X. Pannecoucke, S. Couve-Bonnaire, J-P. Bouillon, Ligand-Free Palladium-Catalyzed Mizoroki-Heck Reaction to Synthesize Valuable α -Trifluoromethylacrylates, *J. Fluorine Chem.*, 233, 109483 (2020).

125) V. Babin, B. Tournier, A. Davis, E. Dubost, G. Pigré, J-F. Lohier, V. Rebould, T. Cailly, J-P. Bouillon, P. Millet, Frédéric Fabis, Design of iodinated radioligands for SPECT imaging of central human 5-HT₄R using a ligand lipophilicity efficiency approach, *Bioorganic Chem.*, 96, 103582 (2020), DOI:10.1016/j.bioorg.2020.103582

124) P. Xiao, X. Pannecoucke, J-P. Bouillon, S. Couve-Bonnaire, Ligand free palladium-catalyzed synthesis of α -trifluoromethylacrylic acids and related acrylates by three-component reaction, *Adv. Synth. Catal.*, 362, 949-954 (2020), DOI: 10.1002/adsc.201901446.

123) E. Dubost, V. Babin, F. Benoist, A. Hébert, G. Pigrée, J-P Bouillon, F. Fabis, T. Cailly, Improvements of C–H Radio-Iodination of N-Acylsulfonamides toward Implementation in Clinics, *Synthesis*, 51, 4393-4400 (2019). DOI: 10.1055/s-0037-1611884.

- 122) P. Xiao, C. Schlinquer, X. Pannecoucke, J-P Bouillon, S. Couve-Bonnaire, Synthesis of α -Trifluoromethylacrylates by Ligand-Free Palladium-Catalyzed Mizoroki-Heck Reaction, *J. Org. Chem.*, 84, 2072-2082 (2019).
- 121) Q. Zhao, J. Wang, T. Besset, X. Pannecoucke, J-P Bouillon, T. Poisson, Palladium-catalyzed synthesis of 3-trifluoromethylated 1,3-dienes from acrylate derivatives and BTP, *Tetrahedron*, 74, 6033-6040 (2018).
- 120) Q. Zhao, M-Y Chen, T. Poisson, X. Pannecoucke, J.-P. Bouillon, T. Besset, Pd-Catalyzed Trifluoromethylthiolation of Unsaturated Compounds: A General Approach, *Eur. J. Org. Chem.*, 6167-6175 (2018).
- 119) E. Dubost, V. Babin, F. Benoist, A. Hébert, P. Barbey, C. Chollet, J-P Bouillon, A. Manrique, G. Pieters, F. Fabis, T. Cailly, Palladium-Mediated Site-Selective C-H Radio-iodination, *Org. Lett.*, 20, 6302-6305 (2018).
- 118) Q. Zhao, M. -H. Vuong, X. -F. Bai, X. Pannecoucke, L. -W. Xu, J. -P. Bouillon, P. Jubault, Catalytic enantioselective synthesis of highly functionalized pentafluorosulfanylated pyrrolidines, *Chem. Eur. J.*, 24, 5644-5651 (2018).
- 117) O. Bouazzaoui, K. Rousée, J. Kajima Mulengi, X. Pannecoucke, J. -P. Bouillon, S. Couve-Bonnaire, Synthesis of fluorinated acrylates by palladium-catalyzed decarboxylative olefination reaction, *Eur. J. Org. Chem.*, 3705-3715 (2018).
- 116) C. Barberot, A. Moniot, I. Allart-Simon, L. Malleret, T. Yegorova, M. Laronze-Cochard, A. Bentaher, M. Médebielle, J. -P. Bouillon, E. Hénon, J. Sapi, F. Velard, S. Gérard, Synthesis and biological evaluation of pyridazinone derivatives as potential anti-inflammatory agents, *Eur. J. Med. Chem.*, 146, 139-146 (2018).
- 115) Q. Zhao, T. Poisson, X. Pannecoucke, J.-P. Bouillon, T. Besset, Pd-Catalyzed diastereoselective trifluoromethylthiolation of functionalized acrylamides, *Org. Lett.*, 19, 5106-5109 (2017).
- 114) A. Lehecq, K. Rousée, C. Schneider, V. Levacher, C. Hoarau, X. Pannecoucke, J.-P. Bouillon, S. Couve-Bonnaire, Metal-catalyzed direct C-H fluoroalkenylation of pyridine N-oxides and related derivatives, *Eur. J. Org. Chem.*, 3049-3054 (2017).
- 113) Q. Zhao, V. Tognetti, L. Joubert, T. Besset, X. Pannecoucke, J.-P. Bouillon, T. Poisson, Palladium-catalyzed synthesis of 3-trifluoromethyl substituted 1,3-butadienes by means of directed C-H bond functionalization, *Org. Lett.*, 19, 2106-2109 (2017).

- 112) K. Rousée, X. Pannecoucke, A.-C. Gaumont, J.-F. Lohier, F. Morlet-Savary, J. Lalevée, J.-P. Bouillon, S. Couve-Bonnaire, S. Lakhdar, Transition metal-free stereospecific access to (E)-(1-fluoro-2-arylvinyl)phosphine borane complexes, *Chem. Commun.*, 53, 2048-2051 (2017).
- 111) N. Chopin, S. Iikawa, J. Bosson, A. Lavoignat, G. Bonnot, A.-L. Bienvenu, S. Picot, J.-P. Bouillon, M. Médebielle, 7-Chloro-4-aminoquinoline \otimes -hydroxy- \otimes -lactam derived-tetramates as a new family of antimalarial compounds, *Bioorg. Med. Chem. Lett.*, 26, 5308–5311 (2016).
- 110) C. De Saint Jores, I. Mukan, T. Yegorova, D. Harakat, J.-P. Bouillon, Straightforward synthesis of tri- and tetra-substituted 3-trifluoromethylfurans by heterocyclization of perfluoroketene dithioacetals, *Tetrahedron*, 72, 6807-6814 (2016).
- 109) K. Rousée, J.-P. Bouillon, S. Couve-Bonnaire, X. Pannecoucke, Stereospecific synthesis of tri- and tetra-substituted α -fluoroacrylates by Mizoroki-Heck reaction, *Org. Lett.*, 18, 540-543 (2016).
- 108) K. Rousée, C. Schneider, J.-P. Bouillon, V. Levacher, C. Hoarau, S. Couve-Bonnaire, X. Pannecoucke, Copper-catalyzed direct C–H fluoroalkenylation of heteroarenes, *Org. Biomol. Chem.*, 14, 353-357 (2016).
- 107) Q. Zhao, T. Besset, T. Poisson, J.-P. Bouillon, X. Pannecoucke, Palladium-catalysed synthesis of α -(trifluoromethyl)styrenes by means of directed C–H bond functionalization, *Eur. J. Org. Chem.*, 76-82 (2016).