
Professional address:

Institut Charles Gerhardt Montpellier, UMR 5253, Equipe Ingénierie Moléculaire et Nano-Objets, Université Montpellier, case 1701, Place Eugène Bataillon, 34095 Montpellier cedex 05

Tél : 04-67-14-45-01, Fax 04-67-14-38-52, e-mail : jean-olivier.durand@univ-montp2.fr

Key-words : Mesoporous silica and silicon nanoparticles, hybrid organic-inorganic nanomaterials, biological applications, photodynamic therapy, targeting, theranostics, siRNA, pDNA, silicon wafers, SAMS, coupling agents, chirality, organic chemistry, enantioselective catalysis, Fluorination.

Professional experience:

*Since October 2012, Directeur de Recherche 2^{ème} classe at CNRS, UMR 5253

*November 1996-September 2012, Chargé de Recherche at CNRS, UMR 5253,

*Habilitation à Diriger des Recherches 13-12-2002.

***Research group with Clarence Charnay and Laurence Raehm (associate Professors):** Silica-based hybrid nanomaterials for biological applications, (photodynamic therapy, drug delivery).

International collaborations and funding :

-ANR Blanche internationale I (December 2012-Novembre 2015) : chemistry of porous silicon nanoparticles for photodynamic therapy. (Frédérique Cunin French coordinator). **American partner : Michael J. Sailor (UCSD).**

-ANR P2N, (March 2011- August 2014) : *Mechanized nanoparticles for two-photon activation.* (Michel Wong Chi Man French coordinator) **American partner : Jeffrey I. Zink (UCLA).**

-PARTNER UNIVERSITY FUND (PUF) (2009-2012): *One and Two-Photon Nanovalves* Research and Teaching program with (UCLA). (Coordinator for the French Part). **American partners: Jeffrey I. Zink, Fuyuhiko Tamanoi, André E. Nel, Kenneth A. Bradley, (UCLA). J. Fraser Stoddart (Northwestern University).**

National collaborations and funding

ANR P2N (March 2013 – August 2016): Mesoporous silica: application to optical fibers and nanoparticles functionalized for PDT (Coordinator).

FEDER Project (May 2012- February 2014): Languedoc-Roussillon Région and European Commission funding. Glyconanovectors for one and two-photon photodynamic therapy. (Coordinator)

ANR Blanche (2011-2014): Assembly/disassembly of innovative prodrug systems using click-unclick strategy. (Oleg Melnyk, Institut de Biologie de Lille, coordinator)

ANR PNANO (2008-2011): Glyconanovectors for one and two-photon photodynamic therapy. (Coordinator)

Since 2000: Director and advisor of 6 PhD theses, 7 Post-doctoral students, 6 Master 2 students.

Training Period

*(December 1995 - November 1996), Post-doctoral researcher in Dr Marc LARCHEVEQUE's laboratory. ENSCParis Subject : cyclic peptides, aminoalcohols and aminodiols, Synthesis of (2R,3S)-3-hydroxyproline.

*(December 1994 - November 1995) Attaché Temporaire d'Enseignement et de Recherche at University of Rennes I, Professor Maurice LE CORRE's laboratory. Synthesis of bicamphor and phosphines derivatives for asymmetric catalysis.

*(February 1993 - September 1994) Post-doctoral researcher at the university of Geneva supervisor : Professor Wolfgang OPPOLZER: Subject : enantioselective metallo-ene reaction.

*(September 1990 - January 1993) PhD of the university of Paris VI,

Mention : Très honorable avec félicitations.

Supervisor : Professeur Jean-Pierre GENET, ENSCParis.

Collaboration with the Astra-Zeneca society.

Subject : Asymmetric synthesis by using the Sharpless' reaction, preparation of bicyclic β -lactamic precursors, and unusual β -hydroxy α -amino acids.

Main Publications:

Mannose-Functionalized Mesoporous Silica Nanoparticles for Efficient Two-Photon Photodynamic Therapy of Solid Tumors

Magali Gary-Bobo, Youssef Mir, Cédric Rouxel, David Brevet, Ilaria Basile, Marie Maynadier, Ophélie Vaillant, Olivier Mongin, Mireille Blanchard-Desce, Alain Morère, Marcel Garcia, Jean-Olivier Durand and Laurence Raehm
Angew. Chem. Int. Ed. **2011**, *50*, 11425-11429

Antibody-Functionalized Porous Silicon Nanoparticles for Vectorization of Hydrophobic Drugs

Secret Emilie, Smith Kevin, Dubljevic Valentina, Moore Eli, Macardle Peter, Delalat Bahman, Rogers Mary-Louise, Johns Terrance G., Durand Jean-Olivier, Cunin Frederique, Voelcker Nicolas H.
Adv. Healthcare Mat. **2013**, *2*, 718-727

Two-Photon-Trigged Drug Delivery in Cancer Cells Using Nanoimpellers

Croissant Jonas, Maynadier Marie, Gallud Audrey, Peindy N'Dongo Harmel, Nyalosaso Jeff L., Derrien Gaelle, Charnay Clarence, Durand Jean-Olivier, Raehm Laurence, Serein-Spirau Françoise, Cheminet Nathalie, Jarrosson Thibaut, Mongin Olivier, Blanchard-Desce Mireille, Gary-Bobo Magali, Garcia Marcel, Lu Jie, Tamanoi Fuyuhiko, Tarn Derrick, Guardado-Alvarez Tania, M., Zink Jeffrey I.
Angew. Chem. Int. Ed., **2013**, *52*, 13813-13817

Two-Photon Excitation of Porphyrin-Functionalized Porous Silicon Nanoparticles for Photodynamic Therapy

Emilie Secret, Marie Maynadier, Audrey Gallud, Arnaud Chaix, Elise Bouffard, Magali Gary-Bobo, Nathalie Marcotte, Olivier Mongin, Khaled El Cheikh, Vincent Hugues, Mélanie Auffan, Céline Frochot, Alain Morère, Philippe Maillard, Mireille Blanchard-Desce, Michael J. Sailor, Marcel Garcia, Jean-Olivier Durand, Frédérique Cunin
Advanced Materials, **2014**, *26*, 7643-7648

Biodegradable Ethylene-Bis(Propyl) Disulfide-Based Periodic Mesoporous Organosilica Nanorods and Nanospheres for Efficient In-Vitro Drug Delivery

Croissant Jonas, Cattoen Xavier, Wong Chi Man Michel, Gallud Audrey, Raehm Laurence, Trens Philippe, Maynadier Marie, Durand Jean-Olivier.
Advanced Materials **2014**, *26*, 6174-6180

81) Mannose-6-Phosphate Receptor, A Target for Theranostics of Prostate Cancer,

Ophélie Vaillant, Khaled El Cheikh, David Warther, David Brevet, Marie Maynadier, Elise Bouffard, Frédéric Salgues, Audrey Jeanjean, Pucho Pierre, Catherine Mazerolle, Philippe Maillard, Olivier Mongin, Mireille Blanchard-Desce, Laurence Raehm, Xavier Rébillard, Jean-Olivier Durand, Magali Gary-Bobo, Alain Morère and Marcel Garcia
Angewandte Chemie International Edition, **2015**, *54*, 5952-5956.

Main Patents

1) Synthesis of metalloporphyrin derivatives, nanoparticles comprising the same, and use thereof for photodynamic therapy . Brevet, David; Hocine, Ouahiba; Durand, Jean-Olivier; Maillard, Philippe; Morere, Alain; Garcia, Marcel; Smaïhi, Monique; Gary-Bobo, Magali ;

2) PCT/FR 2009/ 001090 Appl. (2010), WO 2010029232 A1 20100318

Biphotonic photosensitizers, nanoparticles containing the same and their use as drugs”. Blanchard-Desce M., Garcia M, Durand JO, Raehm L., Morère A, Mongin O., Gary-Bobo M, Brevet D. **EP 09 306 238.8, PCT Int.**

Appl. (2011), WO 2011073054 A1 20110623

3) Preparation of functionalized porous silicon nanoparticles and use in photodynamic therapy Cunin, Frédérique; Durand, Jean-Olivier; Sailor, Michael J.; Garcia, Marcel; Secret, Emilie; Gary-Bobo, Magali; Maynadier, Marie **Fr.**

Demande (2013), FR 2988721 A1 20131004. PCT Int. Appl. (2013), WO 2013144154 A1 20131003

4) Composés polysaccharides multi-fonctionnalisés et leur utilisation pour cibler le récepteur du mannose 6-phosphate cation-indépendant, Morère, Alain; Bouffard, Elise; El Cheikh, Khaled; Da Silva, Afitz; Maynadier, Marie; Durand, Jean-Olivier; **Fr. Demande (18 Septembre 2015), N°FR1558806**

5) Nouvelles Nanoparticules d'organosilice Mésoporeuses, leur méthode de préparation et leurs utilisations : Durand, Jean-Olivier; Mauriello Jimenez Chiara ; Richeter; Sébastien; Raehm, Laurence; Gary-Bobo, Magali; Garica, Macel; Maynadier Marie, **FR demande (19 Janvier 2016) N°INPI 16 50396**

93 Publications, 8 patents, ,