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Research Associate UCSD-CNRS

Born in Carcassonne, France

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EDUCATION

September 1990 - July 1993 : PhD University Paul Sabatier, Toulouse, France
PI : Prof. G Bertrand

June 1990 : DEA " Chimie Moléculaire et Supramoléculaire"
University Paul Sabatier, Toulouse, France

RESEARCH ACTIVITIES

July 2012 – now : Research Associate UCSD-CNRS joint Research
Chemistry Laboratory (UMI 3555), University of
California San Diego, CA, USA

July 2001 – July 2012 : Research Associate UCR/CNRS Joint Research
Chemistry Laboratory (UMI 2957) University of
California Riverside, CA, USA

January 2000 - June 2001 : Chargée de Recherche CNRS (CR1)
Laboratoire de Chimie de Coordination
UPR 8241

January 1999 - December 1999 : Research Associate. Company SANOFI-
SYNTHELABO (Toulouse)

October 1995 - December 1998 : Chargée de Recherche CNRS (CR2)
Université Paris VI (UMR 7611)

September 1993- September 1995 : Post-doctoral position.
BASF. AG. Company.
Ludwigshafen , Germany

PUBLICATIONS

- 1- Photochemical Behavior of Thioxophosporanyl Diazo Compounds : Evidence for Transient λ^5 -Phosphathiirenes and for Structural Isomerizations of the Diazo Group.
M. Soleilhavoup, A. Baceiredo, F. Dahan and G. Bertrand.
Inorg. Chem. **1992**, *31*, 1500.
- 2- Synthesis and X-ray Crystal Structure of $[(i\text{-Pr}_2\text{N})_2\text{P(H)CP(Ni-Pr}_2)_2]^+\text{CF}_3\text{SO}_3^-$: A Carbene, a Cumulene or a Phosphaacetylene ?
M. Soleilhavoup, A. Baceiredo, O. Treutler, R. Ahlrichs, M. Nieger and G. Bertrand.
J. Am. Chem. Soc. **1992**, *114*, 10959.
- 3- Phosphanilylcarbenes : From Unstable Intermediates to X-ray Characterized Compounds.
M. Soleilhavoup, G. Alcaraz, R. Réau, A. Baceiredo and G. Bertrand.
Phosphorus, Sulfur and Silicon. **1993**, *76*, 49.
- 4- The phosphonioyl(phosphoranedilyl)carbene $[(i\text{-Pr}_2\text{N})_2\text{P(H)CP(Ni-Pr}_2)_2]^+$ as a Source of New 1,3-Diphosphaallene Ylides : The First Carbodiphosphorane with P-H Bonds.
M. Soleilhavoup, A. Baceiredo and G. Bertrand.
Angew. Chem. Int. Ed. Engl. **1993**, *32*, 1167.
- 5- Structure and Bonding in Diphosphanilylcarbene. An *ab initio* investigation.
O. Treutler, R. Ahlrichs and M. Soleilhavoup.
J. Am. Chem. Soc. **1993**, *115*, 8788.
- 6- Nucleophilic Additions to a Diphosphirenium Salt : Ring Opening and Ring Expansion Reactions.
M. Soleilhavoup, A. Baceiredo, F. Dahan and G. Bertrand.
J. Chem. Soc. Chem. Commun. **1994**, 337.
- 7- Synthesis and Rearrangement of Intramolecularly Stabilized 1-^2 , 3-^2 -Diphosphaallylic Cations into Intramolecularly Stabilized 1-^1 , 3-^3 -Diphosphaallylic Cations.
M. Soleilhavoup, Y. Canac, A.M. Polozov, A. Baceiredo and G. Bertrand.
J. Am. Chem. Soc. **1994**, *116*, 6149.
- 8- Addition of a Diphosphirenium Salt to Palladium (0) Complexes : The first Examples of Diphosphametallacyclobutenes.
Y. Canac, M. Soleilhavoup, L. Ricard, A. Baceiredo and G. Bertrand.
Organometallics. **1995**, *14*, 3614.
- 9- Synthesis of Biomimetic Heme Precursors : The « Double Picket Fence » 5,10,15,20-Tetrakis (2',6'-dinitro-4'-tert- butylphenyl)porphyrin.
E. Rose, A. Kossanyi, M. Quelquejeu, M. Soleilhavoup, F. Duwavran, N. Bernard and A. Lecas.
J. Am. Chem. Soc. **1996**, *118*, 1567.
- 10- Evidence for a Transient Acylphosphenium Ion.
M. Soleilhavoup, O. Guerret, J-L. Faure, A. Baceiredo and G. Bertrand.
Phosphorus, Sulfur and Silicon. **1997**, *123*, 161.

- 11- Bis-Faced Aminoporphyrin Templates for the Synthesis of Chiral Catalysts and Hemeprotein Analogues.
E. Rose, M. Soleilhavoup, G. Moreau, L. Christ-Tomasino, M. Quelquejeu, J.P. Collman and A. Straumanis.
J. Org. Chem. **1998**, *63*, 2042.
- 12- On ring carbomers of cyclobutane, cyclopentane and cyclodecane, and cyclizing bis(alkynylpropargyl) coupling.
L. Maurette, C. Godard, S. Frau, C. Lepetit, M. Soleilhavoup, R. Chauvin.
Chem. Eur. J. **2001**, *7*, 1165.
- 13- Parallel Approaches to Mono- and Bis- Propargylic Activation via $\text{Co}_2(\text{CO})_8$ and $[\text{Ru}_3(\mu\text{-Cl})(\text{CO})_{10}]^-$
M. Soleilhavoup, C. Saccavini, C. Lepetit, G. Lavigne, L. Maurette, B. Donnadieu, and R. Chauvin.
Organometallics. **2002**, *21*, 871.
- 14- The η^5 -(σ -P, Π -arene) chelating H-MOP ligand in an optically and catalytically active rhodium(I) complex.
M. Soleilhavoup, L. Viau, G. Commenge, C. Lepetit, R. Chauvin.
Eur. J. Inorg. Chem. **2003**, 207.
- 15- 1,4-Diynes from alkynyl-propargyl coupling reactions.
C. Tedeschi, C. Saccavini, L. Maurette, M. Soleilhavoup, R. Chauvin.
J. Organomet. Chem. **2003**, *670*, 151.
- 16- Regio- and stereo-selective double addition of anionic C-nucleophiles to cobalt-stabilized acetylenedicarbonyl aldehyde.
C. Sui-Seng, M. Soleilhavoup, L. Maurette, C. Tedeschi, B. Donnadieu, R. Chauvin.
Eur. J. Org. Chem. **2003**, *9*, 1641.
- 17- Versatile bis-propargylic reactivity of acetylenedicarbonyl-cobalt complexes with neutral nucleophiles : Direct synthesis of a furyl- α -pyrone.
M. Soleilhavoup, L. Maurette, C. Lamirand, B. Donnadieu, M. J. McGlinchey, R. Chauvin.
Eur. J. Org. Chem. **2003**, *9*, 1652.
- 18- Synthesis, conformational analysis and catalytic properties of a chiral P,C-chelated Rhodium(I) complex with a binaprium ylide ligand.
C. Canal, C. Lepetit, M. Soleilhavoup, R. Chauvin.
Afinidad. **2004**, *61*, 298.
- 19- Synthesis and stereochemical resolution of functional [5]pericyclines.
L. Maurette, C. Tedeschi, E. Sermot, M. Soleilhavoup, F. Hussain, B. Donnadieu, R. Chauvin.
Tetrahedron, **2004**, *60*, 10077.
- 20- Stable Non-N-Heterocyclic Carbenes (Non-NHC) : Recent Progress.
Y. Canac, M. Soleilhavoup, S. Conejero, G. Bertrand.
J. Organometal. Chem **2004**, *689*, 3857.
- 21- From phosphorus ylides to carbenes.
M. Soleilhavoup, D. Martin, S. Conejero, G. Bertrand.
Abstracts of Paper, 227th ACS National Meeting, Anaheim, CA, United States, March 28-April 1, **2004**, INOR-737.

- 22- Synthesis of Transient and Stable C-Amino Phosphorus Ylides and their fragmentation into Transient and Stable Carbenes.
Y. Canac, S. Conejero, M. Soleilhavoup, B. Donnadiou, G. Bertrand.
J. Am. Chem. Soc. **2006**, *128*, 459.
- 23- Cyclic C-Amino Phosphorus Ylides as a Source of Bidentate Heteroditopic Ligands (Phosphine/Aminocarbenes) for Transition Metals.
J. Vignolle, B. Donnadiou, D. Bourissou, M. Soleilhavoup, G. Bertrand.
J. Am. Chem. Soc. **2006**, *128*, 14810.
- 24- New Synthetic routes to C-amino Phosphorus ylides and their subsequent fragmentation into carbenes and phosphines.
S. Conejero, M. Song, D. Martin, Y. Canac, M. Soleilhavoup, G. Bertrand.
Chem. Asian J. **2006**, *1*, 155.
- 25- Functional [6]pericyclines : synthesis through [14 + 4] and [8 + 10] cyclization strategies. Part 1.
C. Saccavini, C. Tedeschi, L. Maurette, C. Sui-Seng, C. Zou, M. Soleilhavoup, L. Vendier, R. Chauvin.
Chem. Eur. J. **2007**, *13*, 4895.
- 26- Synthesis of phosphoformamidines and phosphoformamidinates.
M. Song, B. Donnadiou, M. Soleilhavoup, G. Bertrand.
Chem. Asian J. **2007**, *2*, 904.
- 27- Let's play with valence isomers : the influence of different main group elements on their relative stability.
M. Soleilhavoup, G. Bertrand.
Bull. Chem. Soc. Jpn. **2007**, *80*, 1241.
- 28- Cyclic(Amino)[bis(ylide)]carbene as an Anionic Bidentate Ligand for Transition-Metal Complexes.
M. Asay, B. Donnadiou, A. Baceiredo, M. Soleilhavoup, G. Bertrand.
Inorg. Chem. **2008**, *47*, 3949.
- 29- Homogeneous catalytic hydroamination of alkynes and allenes with ammonia.
V. Lavallo, G. D. Frey, B. Donnadiou, M. Soleilhavoup, G. Bertrand.
Angew. Chem. Int. Ed. **2008**, *47*, 5224.
- 30- A persistent P,N-heterocyclic carbene.
G. D. Frey, M. Song, J-B. Bourg, B. Donnadiou, M. Soleilhavoup, G. Bertrand.
Chem. Commun. **2008**, 4711.
- 31- Gold-Catalyzed Intermolecular Markovnikov hydroamination of Allenes with Secondary Amines.
X. Zeng, M. Soleilhavoup, G. Bertrand.
Organic. Letters. **2009**, *11*, 3166.
- 32- Reactivity of Cyclic (Alkyl)(amino)carbenes (CAACs) and Bis(amino)cyclopropenylidenes (BACs) with Heteroallenes: Comparisons with their N-Heterocyclic Carbene (NHCs) Counterparts
Kuchenbeiser, G; Soleilhavoup, M; Donnadiou, B; Bertrand, G.
Chem. Asian. J. **2009**, *4*, 1745.

- 33- Stable Cyclic Carbenes and Related Species beyond Diaminocarbenes
Melaimi, M; Soleilhavoup, M; Bertrand, G
Angew. Chem. Int. Ed. **2010**, *49*, 8810.
- 34- Synthesis of a Room-Temperature-Stable Dimeric Copper(I) Hydride
Frey, GD; Donnadiou, B; Soleilhavoup, M, Bertrand, G.
Chem. Asian. J. **2011**, *6*, 402.
- 35- Stable singlet carbenes as mimics for transition metal centers
Martin, D; Soleilhavoup, M; Bertrand, G
Chem. Sci. **2011**, *2*, 389.
- 36- A Brief Survey of Our Contribution to Stable Carbene Chemistry
Martin, D ; Melaimi, M ; Soleilhavoup, M ; Bertrand, G.
Organometallics, **2011**, *30*, 5304.
- 37- Gold(III)- versus Gold(I)-Induced Cyclization: Synthesis of Six-Membered Mesoionic Carbene and Acyclic (Aryl)(Heteroaryl) Carbene Complexes.
G. Ung, M. Soleilhavoup, G. Bertrand.
Angew. Chem. Int. Ed. **2013**, *52*, 758.
- 38- Carbene-stabilized main group radicals and radical ions.
C. D. Martin, M. Soleilhavoup, G. Bertrand.
Chem. Sci. **2013**, *4*, 3020.
- 39- Stable Carbenes: From Laboratory Curiosities to Powerful Tools.
M. Soleilhavoup, M. Melaimi, D. Martin, G. Bertrand.
Actual Chim. **2013**, *370*, 20.
- 40- Two-Coordinate Fe-0 and Co-0 Complexes Supported by Cyclic (alkyl)(amino) carbenes.
G. Ung, J. Rittle, M. Soleilhavoup, G. Bertrand, J. C. Peters.
Angew. Chem. Int. Ed. **2014**, *53*, 8427.
- 41- Cyclic (Alkyl)(Amino)Carbenes (CAACs): Stable Carbenes on the Rise.
M. Soleilhavoup, G. Bertrand.
Accounts. Chem. Res. **2015**, *48*, 256.
- 42- Air-Stable (CAAC) CuCl and (CAAC)CuBH₄ Complexes as Catalysts for the Hydrolytic Dehydrogenation of BH₃NH₃.
X. B. Hu, M. Soleilhavoup, M. Melaimi, J. X. Chu, G. Bertrand.
Angew. Chem. Int. Ed. **2015**, *54*, 6008.
- 43- Spectroscopic Evidence for a Monomeric Copper(I) Hydride and Crystallographic Characterization of a Monomeric Silver(I) Hydride.
E. Romero, P. M. Olsen, R. Jazzar, M. Soleilhavoup, M. Gembicky, G. Bertrand.
Angew. Chem. Int. Ed. **2017**, *56*, 4024.
- 44- Cyclic (Alkyl)(amino)carbenes (CAACs): Recent Developments.
M. Melaimi, R. Jazzar, M. Soleilhavoup, G. Bertrand.
Angew. Chem. Int. Ed. **2017**, *56*, 10056.

- 45- Phosphorescent 2-, 3-and 4-coordinate cyclic (alkyl)(amino) carbene (CAAC) Cu(I) complexes.
R. Hamze, R. Jazzar, M. Soleilhavoup, P. I. Djurovich, G. Bertrand, M. E. Thompson.
Chem. Commun. **2017**, 53, 9008.
- 46- Borylenes: An Emerging Class of Compounds.
M. Soleilhavoup, G. Bertrand.
Angew. Chem. Int. Ed. **2017**, 56, 10282.
- 47- 1H-1,2,3-Triazol-5-ylidenes: Readily Available Mesoionic Carbenes.
G. Guisado-Barrios, M. Soleilhavoup, G. Bertrand.
Accounts. Chem. Res. **2018**, 51, 3236.
- 48- Eliminating nonradiative decay in Cu(I) emitters: > 99% quantum efficiency and microsecond lifetime.
R. Hamze, J. L. Peltier, D. Sylvinson, M. Jung, J. Cardenas, R. Haiges, M. Soleilhavoup, R. Jazzar, P. I. Djurovich, G. Bertrand, M. E. Thompson.
Science, **2018**, 363, 601.
- 49- The debut of chiral cyclic (alkyl)(amino)carbenes (CAACs) in enantioselective catalysis.
D. Pichon, M. Soleilhavoup, J. Morvan, G. P. Junor, T. Vives, C. Crevisy, V. Lavallo, J-M. Campagne, M. Mauduit, R. Jazzar, G. Bertrand.
Chem. Sci. **2019**, 10, 7807.
- 50- Stable Abnormal N-Heterocyclic Carbenes and their Applications in Catalysis.
S. C. Sau, P. K. Hota, S. K. Mandal, M. Soleilhavoup, G. Bertrand.
Chem. Soc. Rev. **2020**, 49, 1233. Advance Article <https://doi.org/10.1039/C9CS00866G>
- 51- Cyclic (Alkyl)- and (Aryl)-(amino)carbene Coinage Metal Complexes and Their Applications.
R. Jazzar, M. Soleilhavoup, G. Bertrand.
Chem. Rev. **2020**, 120, 4141.
- 52- Stable Carbenes, Nitrenes, Phosphinidenes, and Borylenes: Past and Future.
M. Soleilhavoup, G. Bertrand.
Chem **2020**, 6, 1275.
- 53- Absolute Templating of M(111) Cluster Surrogates by Galvanic Exchange.
J. Peltier, M. Soleilhavoup, D. Martin, R. Jazzar, G. Bertrand.
J. Am. Chem. Soc., **2020**, 142, 16479.

COMMUNICATIONS/POSTERS

April 1991 : Société. Française de Chimie (SFC). Toulouse. Communication

May 1992 : SECO XXIX. Cologne sur Gers. Communication

July 1992 : 12th International Conference on Phosphorus Chemistry. Toulouse. Poster

November 1992 : Société. Française de Chimie (SFC). Montpellier. Poster

December 1995 : Journées de la Division de Chimie de Coordination de la SFC. Versailles. Communication

September 1996 : École d'été du CNRS « Chimie de Coordination, aux Frontières de la Réactivité, des Matériaux et de la Biologie » Gujan-Mestras. Poster

August 1997 : GECO XXXVIII. Mittelwihr, Haut Rhin. Communication

December 1997 : Société. Française de Chimie (SFC). Communication
April 1999 : 2^{ème} Symposium Français « Chimie Combinatoire et Synthèse sur Support Solide »
Rennes.
March 2000 : Laboratoire de Chimie de Coordination du CNRS. Toulouse. Communication
May 2000 : RCOM (1st Rencontres de Chimie Organique de Marseille) Marseille. Poster
September 2000 : Seminaire Fusion Sanofi-Synthelabo. Strasbourg. Poster
January 2001 : Journées Scientifiques du Laboratoire de Chimie de Coordination. Toulouse.
Communication
December 2001 : Inorganic Chemistry Seminar. University of California Riverside. Riverside,
California, USA. Communication
March 2004 : 227th National Meeting of the American-Chemical Society. Anaheim, CA, USA.
Poster
August 2007 : International Conference on Heteroatom Chemistry (ICHAC-8). Riverside, CA,
USA. Poster
April 2008 : 235th American-Chemical-Society. New Orleans, LA, USA. Communication
February 2008 : Zing Conference Heavier Heterocyclic and Heteroatom. Cancun, Mexico.
Poster
February 2009 : Zing Conference Carbene Chemistry. Playa Del Carmen, Mexico. Poster
August 2017 : 254th National Meeting and Exposition of the American-Chemical-Society
(ACS) on Chemistry's Impact on the Global Economy. Washington, DC, USA. Communication
August 2018 : 256th National Meeting and Exposition of the American-Chemical-Society
(ACS) -Nanoscience, Nanotechnology and Beyond. Boston, MA, USA. Communication
August 2019 : XXXth National Meeting and Exposition of the American-Chemical-Society
(ACS) – Chemistry & Water. San Diego, CA, USA. Chemical Reviews Editorial
Advisory Board Meeting

COLLABORATIONS

2016- 2019 : Prof. Thompson, ME. Univ Southern Calif, Dept Chem, Los Angeles, CA 90089
USA. “Organic LED”.
2017- 2018 : Prof. Hu, X. Nanjing University, China. “Epoxidation of Olefins using
Recyclables Carbenes based Copper catalysts”.
2017- present : Dr Guisado-Barrios, G. INAM. Universitat Jaume I of Castell., Spain.
“Pincer Compounds Based on Mesoionic Carbene : Chemistry and Applications”.
2017- present : Prof. Apeloig, Y. Technion-Israel Institute of Technology, Haifa, Israel.
“Study of Paramagnetic Monomeric Carbene Complexes Au (II), Ag (II) and Cu (II) by Ab
initio quantum chemistry and EPR”.
2016- present : Prof. Bezuidenhout, D. Oulu University, Finland.
“Synthesis of Pincer Types Carbenic Complexes”.

SCIENTIFIC IMPACT

h-index: 30
i10-index: 49
Publications/patents: 53
Citations : 5291

EDITORIAL ACTIVITIES

2010-Present : Journal Office Administrator for Chemical Reviews.

