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Institut de Chimie des Substances Naturelles
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Education:

- Graduate studies in Chemistry at the University of Torino (Italy)
1979 : **Ph.D. degree** from the University of **Torino** [Prof. E. Sappa]
Synthesis of organometallic clusters bearing alkyne ligands
1980 : Postdoctoral position at the University of Rennes (France) [Prof. G. Jaouen]. *Chemistry of hetero-polymetallic clusters*
1984 : **Ph.D. degree** from the University of **Paris VI** [Prof. F. Mathey]
Studies on the chemistry of terminal phosphinidene complexes.
1985 : Postdoctoral position at the University of Wisconsin in Madison (U.S.A.) [Prof. R. West]
Low coordinated silicon derivatives: silylenes, disilenes.

Professional course:

Since 1981, **Researcher at the Centre National de la Recherche Scientifique (CNRS)**: Attaché/Chargé de Recherche from 1981 to 1991; Directeur de Recherche, DR2 from 1991 to 2009; DR1 since 2009.

From 1981 to 1997: Member of the research group directed by Professor F. Mathey at the **Ecole Polytechnique** (Palaiseau, France)
Phosphorus organometallic chemistry.

Low coordinated phosphorus derivatives: terminal phosphinidene- and phosphalkene complexes as reaction intermediates and synthetic tools. Strained phosphorus heterocycles: studies on the chemistry of phosphirenes and phosphiranes.

Synthesis and properties of cyclic chiral phosphines: phosphiranes and phosphetanes.

From 1998 to 2004: Member of the research group directed by Professor J-P. Genêt at the **Ecole Nationale Supérieure de Chimie de Paris** (ENSCP)

Chiral phosphetanes and atropisomeric diphosphines. Synthesis and uses as chiral ligands for enantioselective hydrogenations (Rh, Ru).

Since 2005: Team leader at the Institut de Chimie des Substances Naturelles (Gif-sur-Yvette)

Synthesis of new chiral phosphorus derivatives: phospho-ferrocenophanes, planar chiral phosphoric acids and phosphoramidites, phosphahelicenes.

Chiral phosphines as nucleophilic organocatalysts.

Enantioselective gold(I) catalysis.

Since 2015: Director of the Institut de Chimie des Substances Naturelles

Publications : Total of about **170** articles, reviews and book chapters.

SELECTED publications 2008-2018

Enantioselective phosphine organocatalysis

2-Phospha[3]ferrocenophanes with planar chirality : synthesis and use in enantioselective organocatalytic [3+2] cyclizations.

A. Voituriez, A. Panossian, N. Fleury-Brégeot, P. Retailleau, A. Marinetti
J. Am. Chem. Soc. **2008**, *43*, 14030-14031

A new Access to Trisubstituted 3-Pyrrolines under Phosphine Catalysis

M. Schuler, D. Duvvuru, P. Retailleau, J-F. Betzer, A. Marinetti
Org. Lett. **2009**, *11*, 4406-4409

Expanding the scope of enantioselective FerroPHANE-promoted [3+2] annulations on α,β -unsaturated ketones.

N. Pinto, M. Neel, A. Panossian, P. Retailleau, G. Frison, A. Voituriez, A. Marinetti
Chem. Eur. J. **2010**, *16*, 1033-1045

An organocatalytic [3+2] cyclization strategy for the highly enantioselective synthesis of spirooxindoles.

A. Voituriez, N. Pinto, M. Neel, P. Retailleau, A. Marinetti
Chem. Eur. J. **2010**, *16*, 12541-12544

Organocatalytic enantioselective desymmetrization of cyclic enones via phosphine promoted [3+2] annulations.

N. Pinto, P. Retailleau, A. Voituriez, A. Marinetti
Chem. Commun. **2011**, *47*, 1015-1017

Phosphine-catalyzed synthesis of 3,3-spirocyclopenteneoxindoles from γ -substituted allenates: systematic studies and targeted applications.

C. Gomez, M. Gicquel, J-C. Carry, L. Schio, P. Retailleau, A. Voituriez, A. Marinetti
J. Org. Chem. **2013**, *78*, 1488-1496

Synthesis of 3,3'-spirocyclic oxindoles via phosphine catalyzed [4+2] cyclizations.

M. Gicquel, C. Gomez, P. Retailleau, A. Voituriez, A. Marinetti
Org. Lett. **2013**, *15*, 4002-4005

Phosphahelicenes in asymmetric organocatalysis: [3+2] cyclizations of γ -substituted allenes and electron-poor olefins

M. Gicquel, Y. Zhang, P. Retailleau, A. Voituriez, A. Marinetti
Angew. Chem. Int. Ed. **2015**, *54*, 5470

Organocatalysis with chiral phosphoric acids

[3,3]Paracyclophanes as planar chiral scaffolds for the synthesis of new phosphoric acids.

J. Stemper, K. Isaac, V. Duret, P. Retailleau, A. Voituriez, J-F. Betzer, A. Marinetti,
Chem. Commun. **2013**, *49*, 6084-6086

Development of chiral phosphoric acids based on ferrocene-bridged paracyclophane frameworks.

J. Stemper, K. Isaac, J. Pastor, G. Frison, P. Retailleau, A. Voituriez, J-F. Betzer, A. Marinetti
Adv. Synth. Catal. **2013**, *355*, 3613-3624

Planar chiral phosphoric acids with biphenylene-tethered paracyclophane scaffolds: synthesis, characterization, and catalytic screening

K. Isaac, J. Stemper, V. Servajean, P. Retailleau, J. Pastor, G. Frison, K. Kaupmees, I. Leito, J-F. Betzer, A. Marinetti
J. Org. Chem. **2014**, *79*, 9639-9646

Silyl-substituted planar chiral phosphoric acids with ferrocene-bridged paracyclophane frameworks: synthesis, characterization and uses in enantioselective aza-Friedel-Crafts reactions

J. Stemper, K. Isaac, N. Ghosh, H. Lauwick, G. Le Duc, P. Retailleau, A. Voituriez, J-F. Betzer, A. Marinetti
Adv. Synth. Catal. **2017**, *359*, 519-526

Revised theoretical model on enantiocontrol in phosphoric acid catalyzed H-transfer hydrogenation of quinoline
J. Pastor, E. Rezabal, A. Voituriez, J-F. Betzer, A. Marinetti, G. Frison
J. Org. Chem., **2018**, *83*, 2779–2787

Organometallic chemistry and catalysis: enantioselective cycloisomerizations

Platinum(II) complexes featuring chiral diphosphines and *N*-Heterocyclic carbene ligands: Synthesis and evaluation as cycloisomerisation catalysts.

D. Brissy, M. Skander, P. Retailleau, G. Frison, A. Marinetti
Organometallics **2009**, *28*, 140-151.

Platinum(II) catalysts for highly enantioselective 1,6-enyne cycloisomerizations. Synthetic, structural and catalytic studies.

D. Brissy, M. Skander, H. Jullien, P. Retailleau, A. Marinetti
Org. Lett. **2009**, *11*, 2137-2139

Cyclometalated *N*-heterocyclic carbene-platinum catalysts for the enantioselective cycloisomerization of nitrogen tethered 1,6-enynes

H. Jullien, D. Brissy, R. Sylvain, P. Retailleau, S. Gladiali, A. Marinetti
Adv. Synth. Catal. **2011**, *353*, 1109-1124.

Platinum(II) catalyzed enantioselective cycloisomerizations of 3-hydroxylated 1,5-enynes

Y. Zhang, H. Jullien, D. Brissy, P. Retailleau, A. Voituriez, A. Marinetti
ChemCatChem **2013**, *5*, 2051-2057

Planar chiral phosphoramidites with a paracyclophane scaffold : synthesis, gold(I) complexes and enantioselective cycloisomerization of dienyne.

Z. Wu, K. Isaac, P. Retailleau, J-F. Betzer, A. Voituriez, A. Marinetti
Chem. Eur. J. **2016**, *22*, 3278-3281

Enantioselective gold(I)-catalyzed rearrangement of cyclopropyl-substituted 1,6-enynes into 2-oxocyclobutyl-cyclopentanes

Z. Wu, D. Leboeuf, P. Retailleau, V. Gandon, A. Marinetti, A. Voituriez
Chem. Commun. **2017**, *53*, 7026-7029

Short enantioselective synthesis of (-)-rhazinilam using a gold(I)-catalyzed cyclization

V. Magné, C. Lorton, A. Marinetti, X. Guinchard, A. Voituriez
Org. Lett. **2017**, *19*, 4794-4797

Bimetallic gold(I) complexes of photoswitchable phosphines: synthesis and uses in cooperative catalysis

T. Arif, C. Cazorla, N. Saleh, N. Bogliotti, F. Blanchard, V. Gandon, R. Métivier, J. Xie, A. Voituriez, A. Marinetti
Cat. Sci. Technol. **2018**, *8*, 710-715

Studies in medicinal chemistry

N-Heterocyclic carbene-amine-Pt(II) complexes, a new chemical space for the development of platinum-based anticancer drugs.

M. Skander, P. Retailleau, B. Bourrié, L. Schio, P. Mailliet, A. Marinetti
J. Med. Chem. **2010**, *53*, 2146-2154

Antitumor trans-*N*-Heterocyclic Carbene-Amine-Pt(II) Complexes : Synthesis of Dinuclear Species and Exploratory Investigations of DNA Binding and Cytotoxicity Mechanisms

M. Chtchigrovsky, L. Eloy, H. Jullien, L. Saker, E. Ségal-Bendirdijan, J. Poupon, S. Bombard, T. Cresteil, P. Retailleau, A. Marinetti
J. Med. Chem. **2013**, *56*, 2074-2086

Linking of antitumor trans NHC-Pt(II) complexes to G-quadruplex DNA ligand for telomeric targeting
J-F. Betzer, F. Nuter, M. Chtchigrovsky, F. Hamon, G. Kellermann, S. Ali, M-A. Calm ejane, S. Roque, J. Poupon,
T. Cresteil, M-P. Teulade-Fichou, A. Marinetti, S. Bombard
Bioconjugate Chem. **2016**, *27*, 1456-1470

Inhibition of p53-Murine Double Minute 2 (MDM2) Interactions with 3,3-Spirocyclopentene Oxindole
Derivatives
M. Gicquel, C. Gomez, M-C. Garcia Alvarez, O. Pamard, V. Gu erineau, E. Jacquet, J. Bignon, A. Voituriez, A.
Marinetti
J. Med. Chem. ASAP DOI: 10.1021/acs.jmedchem.8b01137

Phosphahelicenes: synthesis and catalytic applications

1H-Phosphindoles as structural units in the synthesis of chiral helicenes
K. Yavari, S. Moussa, B. Ben Hassine, P. Retailleau, A. Voituriez, A. Marinetti
Angew. Chem. Int. Ed. **2012**, *27*, 6748-6752

Heterohelicenes embedding P-chiral 1H-phosphindole or dibenzophosphole units: diastereoselective
photochemical synthesis and structural characterization.
K. Yavari, P. Retailleau, A. Voituriez, A. Marinetti,
Chem. Eur. J. **2013**, *19*, 9939-9947

Helicenes with embedded phosphole units in enantioselective gold catalysis.
K. Yavari, P. Aillard, F. Nuter, P. Retailleau, A. Voituriez, A. Marinetti
Angew. Chem. Int. Ed. **2014**, *53*, 861-865

A [2+2+2] cycloaddition strategy for the synthesis of phosphorus embedding [6]helicene-like structures
P. Aillard, P. Retailleau, A. Voituriez, A. Marinetti
Chem. Commun. **2014**, *50*, 2199-2201

Phospha-thiahelicenes : synthesis and uses in enantioselective gold catalysis
P. Aillard, A. Voituriez, D. Dova , S. Cauteruccio, E. Licandro, A. Marinetti
Chem. Eur. J. **2014**, *20*, 12373-12376

Synthesis of Substituted Phosphathiahelicenes via Regioselective Bromination of a Preformed Helical Scaffold: a
New Approach to Modular Ligands for Enantioselective Gold-Catalysis
P. Aillard, D. Dova, V. Magn e, P. Retailleau, S. Cauteruccio, E. Licandro, A. Voituriez, A. Marinetti
Chem. Commun. **2016**, *52*, 10984-10987

Photochemical [2+2] cyclization of helical phosphinamides in solution and in the solid state
C. S. Demmer, P. Aillard, J. Febvay, P. Retailleau, A. Voituriez, A. Marinetti
ChemPhotoChem **2017**, *1*, 535-538