

# Mohand-Ameziane MELAIMI

## Professional Address

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## Post-doctoral and Research Position

**July 2012-Current:** Research associate at UC San Diego as “chargé de recherche CR1” (CNRS) in the group of Pr. Bertrand (UMI 3555).

**October 2006 – June 2012:** Research associate at UC Riverside as “chargé de recherche CR1” (CNRS) in the group of Pr. Bertrand (UMI 2957).

**February 2004 - May 2006: Postdoctoral research associate:** in Pr. Gabbai group (Texas A&M University).

## Education

**2003:** **Ph.D. in organometallic chemistry** under the supervision of Dr. P. Le Floch, in Professor Mathey's group at Ecole polytechnique in Palaiseau, France.

**2000:** « **DEA de chimie organique et bioorganique** »(Master degree) at the Université Pierre et Marie Curie (Paris VI).  
10 months research project under the supervision of Dr. L. Dechoux, in Professor Agami's group.

**1999 :** « **Maîtrise de chimie** »(B.S degree), Université Pierre et Marie Curie (Paris VI). 1 month research project under the supervision of Dr. Y. Bleriot, in Professor Sinay's group in the chemistry department at the Ecole Normale Supérieure in Paris.

**1998:** « **Licence de chimie** », Université Pierre et Marie Curie (Paris VI).

**1997:** « **DEUG : science et structure de la matière** », Université of Marne La Vallée.

## Administrative Responsibilities

Safety Coordinator UCSD-CNRS (IRL 3555, Bertand Laboratory): **2023** - current

## Grants and Professional Affiliations

**2000:** MRT Ph.D. fellowship (French ministry of research)

**2003:** Lavoisier Postdoctoral Grant (French ministry of foreign affairs)

**2013:** Member of ACS (American Chemical Society, #30409875).

**2013:** Member of SFC (Société française de chimie, #26071).

## PUBLICATIONS (February 2026)

- 1) C. Agami, L. Dechoux, M. Melaimi. An efficient synthesis of pyrimidines from beta-amino alcohols. *Org. Lett.* **2000**, *2*, 633-634. DOI: [10.1021/o1991385x](https://doi.org/10.1021/o1991385x).
- 2) C. Agami, L. Dechoux, L. Hamon, M. Melaimi. An efficient synthesis of a new series of acyclonucleosides starting from beta-amino alcohols. *J. Org. Chem.* **2000**, *65*, 6666-6669. DOI: [10.1021/jo000812d](https://doi.org/10.1021/jo000812d).
- 3) C. Agami, S. Cheramy, L. Dechoux, M. Melaimi. Enantioselective synthesis of alpha,beta-substituted beta-amino acids. *Tetrahedron* **2001**, *57*, 195-200. DOI: [10.1016/S0040-4020\(00\)00997-2](https://doi.org/10.1016/S0040-4020(00)00997-2).
- 4) C. Agami, L. Dechoux, M. Melaimi. Chemoselective reduction of pyrimidines. An access to enantiopure tetrahydropyrimidinones. *Tetrahedron Lett.* **2001**, *42*, 8629-8631. DOI: [10.1016/S0040-4039\(01\)01875-5](https://doi.org/10.1016/S0040-4039(01)01875-5).
- 5) M. Melaimi, F. Mathey, P. Le Floch. Bis(diphosphaferrocene)palladium(II) dimer as efficient catalysts in the synthesis of arylboronic esters. *J. Organomet. Chem.* **2001**, *640*, 197-199. DOI: [10.1016/S0022-328X\(01\)01146-9](https://doi.org/10.1016/S0022-328X(01)01146-9).
- 6) P. Le Floch, F. Mathey, N. Mézailles, M. Melaimi, P. Rosa, X. Sava. Phosphinines and phosphoferrocenes: Recent advances. *Journal of Tsinghua University* **2001**, *41*, 13-21.
- 7) P. Rosa, X. Sava, N. Mézailles, M. Melaimi, L. Ricard, F. Mathey, P. Le Floch. Phosphinines and diphosphaferrocenes: Recent advances. *Phosphorus and Sulfur* **2002**, *177*, 1529-1532. DOI: [10.1080/10426500212220](https://doi.org/10.1080/10426500212220).
- 8) M. Melaimi, L. Ricard, F. Mathey, P. Le Floch. Synthesis of phosphole-2,5-dicarboxylic acid via a [1,5] shift of carbon dioxide around the phosphole nucleus. *Org. Lett.* **2002**, *4*, 1245-1247. DOI: [10.1021/o10102895](https://doi.org/10.1021/o10102895).
- 9) M. Doux, N. Mézailles, M. Melaimi, L. Ricard, P. Le Floch. A  $\sigma^4, \lambda^5$ -Phosphinine palladium complex: A new type of phosphorus ligand and catalyst. Application to the Pd-catalyzed

- formation of arylboronic esters. *Chem. Commun.* **2002**, 1566-1570. DOI: [10.1039/B203550B](https://doi.org/10.1039/B203550B).
- 10) X. Sava, M. Melaimi, N. Mézailles, L. Ricard, F. Mathey, P. Le Floch. Cationic diphosphaferrocene gallium dichloride complexes. *New J. Chem.* **2002**, 26; 1378-1383. DOI: [10.1039/B204075C](https://doi.org/10.1039/B204075C).
  - 11) N. Maigrot, M. Melaimi, L. Ricard, P. Le Floch. Reactivity of 1,3,2-diazaphosphinines towards propargyl phosphine-sulfides and activated alkenes. *Heter. chem.* **2003**, 14, 326-333. DOI: [10.1002/hc.10152](https://doi.org/10.1002/hc.10152).
  - 12) X. Sava, M. Melaimi, N. Mézailles, L. Ricard, F. Mathey, P. Le Floch. Cationic bis-diphosphaferrocene copper and gold complexes. *New J. Chem.* **2003**, 1-2; 1233-1239. DOI: [10.1039/B301408H](https://doi.org/10.1039/B301408H).
  - 13) C. Thoumazet, M. Melaimi, L. Ricard, F. Mathey, P. Le Floch. A cationic 1-(2-methylpyridine)phosphole cymene ruthenium. *Organometallics* **2003**, 22, 1580-1581. DOI: [10.1021/om0300651](https://doi.org/10.1021/om0300651).
  - 14) M. Melaimi, L. Ricard, F. Mathey, P. Le Floch. A mixed palladium(0) palladium(II) bis-diphosphaferrocene complex. *J. Organomet. Chem.* **2003**, 684, 189-193. DOI: [10.1016/S0022-328X\(03\)00524-2](https://doi.org/10.1016/S0022-328X(03)00524-2).
  - 15) C. Thoumazet, M. Melaimi, L. Ricard, F. Mathey, P. Le Floch. (2,5-diphenylphospholyl)-(2-methylpyridine and 2-methyl-5R-phenyl-oxazoline PdCl<sub>2</sub> complexes: Syntheses, X-ray crystal structures and use in the Miyaura and Heck coupling reactions. *C. R. Acad. Sci., Ser IIc* **2004**, 8-9, 823-832. DOI: [10.1016/j.crci.2004.04.009](https://doi.org/10.1016/j.crci.2004.04.009).
  - 16) M. Melaimi, C. Thoumazet, L. Ricard, P. Le Floch. Syntheses of a 2,6-bis-(methylphospholyl)pyridine ligand and its cationic Pd(II) and Ni(II) complexes – application in the palladium-catalyzed synthesis of arylboronic esters. *J. Organomet. Chem.* **2004**, 689, 2988-2994. DOI: [10.1016/j.jorganchem.2004.06.035](https://doi.org/10.1016/j.jorganchem.2004.06.035).
  - 17) M. Melaimi, F. P. Gabbai. Syntheses and properties of bifunctional Lewis acids. *Advances in Organometallic Chemistry* **2005**, 53, 61. (Book Chapter)
  - 18) M. Melaimi, F. P. Gabbai. A Heteronuclear Bidentate Lewis Acid as a Phosphorescent Fluoride Sensor. *J. Am. Chem. Soc.* **2005**, 127, 9680-9681. DOI: [10.1021/ja053058s](https://doi.org/10.1021/ja053058s).
  - 19) C. N. Burrell, M. Melaimi, T. J. Taylor, François P. Gabbai. Mercury and Cadmium organometallics. *Comprehensive Organometallic Chemistry III* **2007**, 2, 419. (Book Chapter).

- 20) T. W. Hudnall, M. Melaimi, F. P. Gabbai. A Hybrid Lewis Acid / Hydrogen-Bond Donor Receptor for Fluoride. *Org. Lett.* **2006**, *8*, 2747-2749. DOI: [10.1021/ol060791v](https://doi.org/10.1021/ol060791v).
- 21) M. Melaimi, S. Solé, C.-W. Chiu, H. Wang, F. P. Gabbai. Structural and electrochemical investigation in the high fluoride affinity of sterically hindered 1,8-bis(boryl)naphthalenes. *Inorg. Chem.* **2006**, *45*, 8136-8143. DOI: [10.1021/ic060709s](https://doi.org/10.1021/ic060709s).
- 22) M. Melaimi, P. Parameswaran, B. Donnadieu, G. Frenking, G. Bertrand. Synthesis and Ligand Properties of a Persistent, All-Carbon Four-Membered-Ring Allene. *Angew. Chem. Int. Ed.* **2009**, *48*, 4792-4795 DOI: [10.1002/anie.200901117](https://doi.org/10.1002/anie.200901117); *Angew. Chem.* **2009**, *121*, 4886-4889. DOI: [10.1002/ange.200901117](https://doi.org/10.1002/ange.200901117).
- 23) M. Melaimi, M. Soleilhavoup, G. Bertrand. Stable Cyclic Carbenes and Related Species beyond Classical diaminocarbenes. *Angew. Chem. Int. Ed.* **2010**, *49*, 8810-8849. DOI: [10.1002/anie.201000165](https://doi.org/10.1002/anie.201000165); *Angew. Chem.* **2010**, *122*, 8992-9032. DOI: [10.1002/ange.201000165](https://doi.org/10.1002/ange.201000165).
- 24) O. Back, M. Celik, G. Frenking, M. Melaimi, B. Donnadieu, G. Bertrand. A Crystalline Phosphinyl Radical. *J. Am. Chem. Soc.* **2010**, *132*, 10262-10265. DOI: [10.1021/ja1046846](https://doi.org/10.1021/ja1046846).
- 25) D. Martin, M. Melaimi, M. Soleilhavoup, G. Bertrand. A Brief Survey of Our Contribution to Stable Carbene Chemistry. *Organometallics* **2011**, *30*, 5304-5313. DOI: [10.1021/om200650x](https://doi.org/10.1021/om200650x).
- 26) M. Melaimi, F. P. Gabbai. Synthesis and Electrochemical Behavior of Mixed Organoboron/Organomercury Compounds. *Z. Anorg. Allg. Chem.* **2012**, *638*, 1667-1671. DOI: [10.1002/zaac.201200098](https://doi.org/10.1002/zaac.201200098).
- 27) M. Soleilhavoup, M. Melaimi, D. Martin, G. Bertrand. Les carbènes stables. *L'actualité chimique* **2013**, *370*, 1-8.
- 28) D. A. Ruiz, G. Ung, M. Melaimi, G. Bertrand. Deprotonation of a Borohydride: Synthesis of a Carbene-Stabilized Boryl Anion. *Angew. Chem. Int. Ed.* **2013**, *52*, 7590-7592. DOI: [10.1002/anie.201303457](https://doi.org/10.1002/anie.201303457); *Angew. Chem.* **2013**, *125*, 7739-7742. DOI: [10.1002/ange.201303457](https://doi.org/10.1002/ange.201303457).
- 29) D. S. Weinberger, M. Melaimi, C. E. Moore, A. L. Rheingold, G. Frenking, P. Jerabek, G. Bertrand. Isolation of Neutral Mono- and Dinuclear Gold Complexes of Cyclic (Alkyl)(amino)carbenes. *Angew. Chem. Int. Ed.* **2013**, *52*, 8964-8967. DOI: [10.1002/anie.201304820](https://doi.org/10.1002/anie.201304820); *Angew. Chem.* **2013**, *125*, 9134-9137. DOI: [10.1002/ange.201304820](https://doi.org/10.1002/ange.201304820).
- 30) D. A. Ruiz, M. Melaimi, G. Bertrand. Carbodicarbenes, Carbon(0) Derivatives, Can Dimerize. *Chem. Asian J.* **2013**, *8*, 2940-2942. DOI: [10.1002/asia.201300887](https://doi.org/10.1002/asia.201300887).

- 31) L. Jin, M. Melaimi, L. Liu, G. Bertrand. Singlet carbenes as mimics for transition metals: Synthesis of an air stable organic mixed valence compound  $[M_2(C_2)^{+\bullet}]$ ; M = cyclic(alkyl)(amino)carbene]. *Org. Chem. Front.* **2014**, *1*, 351-354. DOI: [10.1039/C4QO00072B](https://doi.org/10.1039/C4QO00072B).
- 32) D. S. Weinberger, N. Amin SK, K. C. Mondal, M. Melaimi, G. Bertrand, A. C. Stückl, H. W. Roesky, B. Dittrich, S. Demeshko, B. Schwederski, W. Kaim, P. Jerabek, G. Frenking. Isolation of Neutral Mononuclear Copper Complexes Stabilized by Two Cyclic (Alkyl)(amino)carbenes. *J. Am. Chem. Soc.* **2014**, *136*, 6235-6238. DOI: [10.1021/ja502521b](https://doi.org/10.1021/ja502521b).
- 33) D. A. Ruiz, M. Melaimi, G. Bertrand. An efficient synthetic route to stable bis(carbene)borylenes  $[(L1)(L2)BH]$ . *Chem. Commun.* **2014**, *50*, 7837-7839. DOI: [10.1039/C4CC03497J](https://doi.org/10.1039/C4CC03497J).
- 34) L. Jin, D. S. Weinberger, M. Melaimi, C. E. Moore, A. L. Rheingold, G. Bertrand. Trinuclear Gold Clusters Supported by CAAC Ligands; Mimics for Gold Heterogeneous Catalysts. *Angew. Chem. Int. Ed.* **2014**, *53*, 9059-9063. DOI: [10.1002/anie.201404665](https://doi.org/10.1002/anie.201404665); *Angew. Chem.* **2014**, *126*, 9205-9209. DOI: [10.1002/ange.201404665](https://doi.org/10.1002/ange.201404665).
- 35) X. Hu, D. Martin, M. Melaimi, G. Bertrand. Gold-Catalyzed Hydroarylation of Alkenes with Dialkylanilines. *J. Am. Chem. Soc.* **2014**, *136*, 13594-13597. DOI: [10.1021/ja507788r](https://doi.org/10.1021/ja507788r).
- 36) V. M. Marx, A. H. Sullivan, M. Melaimi, S. C. Virgil, B. K. Keitz, D. S. Weinberger, G. Bertrand, R. H. Grubbs. Cyclic Alkyl Amino Carbene (CAAC) Ruthenium Complexes as Remarkably Active Catalysts for Ethenolysis. *Angew. Chem. Int. Ed.* **2015**, *54*, 1919-1923. DOI: [10.1002/anie.201410797](https://doi.org/10.1002/anie.201410797); *Angew. Chem.* **2015**, *127*, 1939-1943. DOI: [10.1002/ange.201410797](https://doi.org/10.1002/ange.201410797).
- 37) Y. D. Bidal, M. Lesieur, M. Melaimi, D. B. Cordes, A. M. Z. Slawin, G. Bertrand, C. S. J. Cazin. A Simple Access to Transition Metal Cyclopropenylidene Complexes. *Chem. Commun.* **2015**, *51*, 4778-4781. [10.1039/C4CC10375K](https://doi.org/10.1039/C4CC10375K).
- 38) D. R. Tolentino, L. Jin, M. Melaimi, G. Bertrand. Mesoionic Carbene-Gold(I) Catalyzed Bis-Hydrohydrazination of Alkynes with Parent Hydrazine. *Chem. Asian J.* **2015**, *10*, 2139-2142. DOI: [10.1002/asia.201403408](https://doi.org/10.1002/asia.201403408).
- 39) X. Hu, M. Soleilhavoup, M. Melaimi, G. Bertrand. Air-Stable (CAAC)CuCl and (CAAC)CuBH<sub>4</sub> Complexes as Catalysts for the Hydrolytic Dehydrogenation of BH<sub>3</sub>NH<sub>3</sub>. *Angew. Chem. Int. Ed.* **2015**, *54*, 6008-6011. DOI: [10.1002/anie.201500224](https://doi.org/10.1002/anie.201500224); *Angew. Chem.* **2015**, *127*, 6106-6109. DOI: [10.1002/ange.201500224](https://doi.org/10.1002/ange.201500224)

- 40) S. Styra, M. Melaimi, C. E. Moore, A. L. Rheingold, T. Augenstein, F. Breher, G. Bertrand. A Crystalline Cyclic (alkyl)(amino)carbene-Tetrafluoropyridyl Radical. *Chem. Eur. J.* **2015**, *21*, 8441-8446. DOI: [10.1002/chem.201500740](https://doi.org/10.1002/chem.201500740).
- 41) L. Jin, D. R. Tolentino M. Melaimi, G. Bertrand. Isolation of Bis(copper) Key Intermediates in Cu-Catalyzed Azide-Alkyne "Click Reaction. *Sci. Adv.* **2015**, *1*, 1:e1500304. DOI: [10.1126/sciadv.1500304](https://doi.org/10.1126/sciadv.1500304).
- 42) Y. D. Bidal, M. Lesieur, M. Melaimi, F. Nahra, D. B. Cordes, K. S. A. Arachchige, A. M. Z. Slawin, G. Bertrand, C. S. J. Cazin. Copper(I) complexes bearing carbenes beyond classical NHCs: Synthesis and catalytic activity in "Click Chemistry". *Adv. Synth. Cat.* **2015**, *357*, 3155-3161. DOI: [10.1002/adsc.201500453](https://doi.org/10.1002/adsc.201500453).
- 43) B. Rao, H. Tang, X. Zeng, L. Liu, M. Melaimi, G. Bertrand. Cyclic (Amino)(aryl)carbenes (CAArCs) as Strong  $\sigma$ -Donating and  $\pi$ -Accepting Ligands for Transition Metals. *Angew. Chem. Int. Ed.* **2015**, *54*, 14915-14919. DOI: [10.1002/anie.201507844](https://doi.org/10.1002/anie.201507844); *Angew. Chem.* **2015**, *127*, 15128-15132. DOI: [10.1002/ange.201507844](https://doi.org/10.1002/ange.201507844).
- 44) L. Jin, E. A. Romero, M. Melaimi, G. Bertrand. The Janus Face of the X Ligand in the Copper-Catalyzed Azide-Alkyne Cycloaddition. *J. Am. Chem. Soc.* **2015**, *137*, 15696-15698. DOI: [10.1021/jacs.5b11028](https://doi.org/10.1021/jacs.5b11028).
- 45) L. Jin, M. Melaimi, A. Kostenko, M. Karni, Y. Apeloig, C. E. Moore, A. L. Rheingold, G. Bertrand. Isolation of cationic and neutral (allenylidene)(carbene) and bis(allenylidene)gold Complexes. *Chem. Sci.* **2016**, *7*, 150-154. DOI: [10.1039/C5SC03654B](https://doi.org/10.1039/C5SC03654B).
- 46) J. L. Peltier, R. Jazzar, M. Melaimi, G. Bertrand. Ancillary Ligand-Free Copper Catalysed Hydrohydrazination of Terminal Alkynes with  $\text{NH}_2\text{NH}_2$ . *Chem. Commun.* **2016**, *52*, 2733-2735. DOI: [10.1039/C5CC10427K](https://doi.org/10.1039/C5CC10427K).
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- 48) J. Chu, D. Munz, R. Jazzar, M. Melaimi, G. Bertrand. Synthesis of Hemilabile Cyclic (Alkyl)(amino)carbenes (CAACs) and Applications in Organometallic Chemistry. *J. Am. Chem. Soc.* **2016**, *138*, 7884-7887. DOI: [10.1021/jacs.6b05221](https://doi.org/10.1021/jacs.6b05221).
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- 51) C. C. Mokhtarzadeh, A. E. Carpenter, D. P. Spence, M. Melaimi, N. Weidemann, D. W. Agnew, C. E. Moore, A. L. Rheingold, J. S. Figueroa. Geometric and Electronic Structure Analysis of the Three-Membered Electron-Transfer Series  $[(\mu\text{-CNR})_2[\text{CpCo}]_2]^n$  ( $n = 0, 1^-, 2^-$ ) and its Relevance to the Classical Bridging-Carbonyl System. *Organometallics* **2017**, *36*, 2126-2140. DOI: [10.1021/acs.organomet.7b00164](https://doi.org/10.1021/acs.organomet.7b00164).
- 52) E. Tomás-Mendivil, M. M. Hansmann, C. M. Weinstein, R. jazzar, M. Melaimi, G. Bertrand. Bicyclic (Alkyl)(amino)carbenes (BICAACs): Stable Carbenes More Ambiphilic than CAACs. *J. Am. Chem. Soc.* **2017**, *139*, 7753-7756. DOI: [10.1021/jacs.7b04640](https://doi.org/10.1021/jacs.7b04640).
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- 59) M. T. Proetto, Alexander, K. M. Melaimi, G. Bertrand, Gianneschi, N. C. Cyclic (Alkyl)(Amino)Carbene (CAAC) Gold(I) Complexes as Chemotherapeutic Agents. *Chem. Eur. J.* **2021**, *27*, 3772-3778. DOI: [10.1002/chem.202004317](https://doi.org/10.1002/chem.202004317).

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## Highlights on Listed Publications

Highlight on publication # 29

R. Doherty, *Nat. Chem.* **2013**, 5, 728.

“Transition metal complexes: 24-carat chemistry”

Highlight on publication # 36

S. Bloomer, L. Kleiner, D. McCall, R. Moreau, *Inform* **2015**, 26, 308.

“Efficient new catalysts for making olefins from seed oils”

Highlight on publication # 36

P. Szuromi, *Science* **2015**, 347, 517.

“Olefins from seed oils at industrial scales”

Highlight on publication # 41

D. Bradley, *Chemistry World* **2015**, 12 June.

“Copper click chemistry mechanism unraveled”

Highlight on publication # 60

J. A. Murphy. *Chem Catal.* **2021**, 1, 26-28.

“Breslow-type intermediates as super electron donors in 3-component coupling reactions”

Highlight on publication # 61

*ChemistryViews* **2022**, July 7).

“New Family of Cyclic (Alkyl)(Amino)Carbenes”

Highlight on publication # 62

H. Wang, X. Wu, Y. R. Chi. *Chem Catal.* **2022**, 2, 3275-3277).

“Distal difunctionalization of aldehydes via the triplet state of Breslow intermediates”

Highlight on publication # 63 and #65

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“Broken vows: Separation of carbene and the lone pair unleashes dicationic revelry”

Highlight on publication # 65

Bethany Halford. *C&En* **2023**, September 20).

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“Doubly oxidized carbene tests the limits of the octet rule”

**ChemistryViews 2023**, September 27).  
“Doubly Oxidized Carbene”

## **PATENTS**

- 1) Cyclic alkyl amino carbene (CAAC) ruthenium complexes as improved catalysts for ethenolysis reactions.  
V. M. MARX, M. MELAIMI, S. C. VIRGIL, B. K. KEITZ, R. H. GRUBBS, G. BERTRAND  
**U.S. Provisional Patent Application No: 61/810795 filed on April 11, 2014**  
**U.S. Pat. Appl. Publ. (2014), US 20140309433 A1 20141016.**
  
- 2) Iminium Salts With A Barralene Ring, Corresponding Ruthenium Complexes, And Uses Thereof.  
MAUDUIT, M., MORVAN, J., TALCIK, J., JAZZAR, R., BERTRAND, G., MELAIMI, M., SERRATO, M. R. **PCT/EP2022/082039 (Filed November 15, 2022), WO 2020/109217 A2; Publication date: February 6, 2025.**