

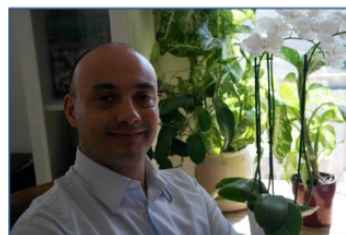
Title: Toxic gases ppb sensing - the contribution of diamondoid phosphine ligands in material sciences and catalysis

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Having a PhD from Université Paul Sabatier, Toulouse, Jean-Cyrille Hierso is now full professor of Chemistry since 2009, heading the group of "Organometallic Chemistry and Catalysis" at the Institute of Molecular Chemistry at the *Université de Bourgogne Franche-Comté (UBFC)*. He has interest in the fields of organometallic chemistry, ligand design, homo- and heterogeneous catalysis, chemical physics, and material sciences. In 2011 he was awarded the National Prize for Coordination Chemistry from the French Chemical Society (SCF) and at the end of 2012 he was elected Member of the French Professors Academy "Institut Universitaire de France" (IUF). He has been nominated Junior Distinguished Member of the SCF in 2015. A topic developed in his group concerns catalytic C–H bond functionalization and C–heteroatom bond formation.

Career

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| 2018- | Scientific Coordinator COMUE-Bourgogne Franche-Comté for Fundamental Sciences, Applied and Technology (SFAT) (11 laboratories, 700 people in <i>chemistry, physics, mathematics, electronic, computer science, mechanics and robotics</i>) |
| 2018- | Outstanding class Professor (PR-Ex1) , Université de Bourgogne, CNU <i>National promotion competition</i> |
| 2017-2022 | Deputy Director of CNRS Institute of Molecular Chemistry uB 6302 (120 people: 60 permanents, 90 researchers) |
| 2014-2018 | 1 st class Full Professor (PR1), Université de Bourgogne, CNU <i>National promotion competition</i> |
| 2009-2014 | 2 nd class Full Professor (PR2), Institute of Molecular Chemistry, Université de Bourgogne |
| 2006-2009 | Associate professor – Habilitation 04/2006 (HDR in <i>Coordination Chemistry and Catalysis</i>) |
| 2001-2006 | Assistant professor (<i>Maître de Conférences</i>), Université de Bourgogne, Pr. Meunier group |

Scientific Interest and Output

Scientific Interest: Coordination chemistry; ligands; polyphosphines; metallocenes; homogeneous catalysis; heterogeneous catalysis; palladium; gold; C–C, C–X cross-couplings (X = O, N, S, F, Cl, Br, I); C–H functionalization; phosphorus; boron; amphiphiles; high resolution NMR nanodiamonds; materials vapor deposition; sensing;

Input: Supervised 15 PhD students (4 in course) and 12 post-doctoral fellows; Published > 110 international scientific publications and patents; >80 invited Lectures (16 invited Conferences in International Congress);

Representative Papers

- Catalytic C–H halogenation and fluorination: *Ortho*-functionalized aryltetrazines by direct palladium-catalyzed C–H halogenation: application to fast electrophilic fluorination reactions. *Angewandte Chemie, International Edition* (2016), 55, 5555-5559.
- Catalytic C–H alkylation: A General Palladium-Catalyzed Method for Alkylation of Heteroarenes Using Secondary and Tertiary Alkyl Halides. *Angewandte Chemie, International Edition* (2014), 53, 13573-13577.
- Catalytic C–H arylation: A Versatile palladium/triophosphane system for direct arylation of heteroarenes with chloroarenes at low catalyst loading. *Angewandte Chemie International Edition* (2010), 49, 6650-6654.
- Catalytic Sonogashira alkynylation: Palladium-based catalytic systems for the synthesis of conjugated enynes by Sonogashira and related alkynylation. *Angewandte Chemie International Edition* (2007), 46, 834-871.
- (P, B, N)-Hybrid amphiphile ligands synthesis: A general diastereoselective synthesis of highly functionalized ferrocenyl amphiphiles enabled on a large scale by electrochemical purification. *Chemical Communications* (2017), 53, 6017-6020.
- P-Constrained polydentate ligands synthesis: Modular functionalized polyphosphines for supported materials: previously unobserved ³¹P-NMR « throughspace » ABCD spin systems and heterogeneous palladium-catalysed C–C and C–H arylation. *Chemical Communications* (2014), 50, 9505-9508.
- NMR spin-coupling elucidation in organic molecules: Indirect Nonbonded Nuclear Spin-Spin Couplings: a Guide for the Recognition and Understanding of «Through-Space» NMR *J* Constants in Small Organic, Organometallic and Coordination Compounds. *Chemical Reviews* (2014), 114, 4838-4867.
- NMR spin-coupling elucidation in polyphosphines: "Through-space" nuclear spin-spin *J*_{PP} coupling in tetraphosphine ferrocenyl derivatives: A ³¹P NMR and X-ray structure correlation study for coordination complexes. *Journal of the American Chemical Society* (2004), 126, 11077-11087.
- Heterogeneous recyclable catalytic materials: Highly-dispersed palladium-polypyrrole nanocomposites Pd@PPy: "in-Water" synthesis and application for catalytic arylation of heteroaromatics by direct C–H bond activation. *Advanced Functional Materials* (2011), 21, 1064-1075.
- Nanodiamonds for materials applications: Nanodiamond-Palladium Core-Shell Organohybrid Synthesis: A Mild Vapor-Phase Procedure Enabling Nanolayering Metal onto Functionalized sp³-Carbon. *Advanced Functional Materials* (2018), 1705786.