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Education

Dr.-Ing. (1971), Dr. ès Sciences (1974): Université Louis Pasteur, Strasbourg

Academic Carrier

1971–1972 : Post-doctoral fellow, Department of Chemistry, University College London (supervisors: Profs. Sir R. S. Nyholm and R. J. H. Clark)
1972: Attaché de recherche CNRS, Université Louis Pasteur, Strasbourg
1974–1975: Alexander von Humboldt Fellow, Technical University Munich (Germany) (supervisor: Prof. E. O. Fischer, Nobel Prize)
1975: Chargé de recherche CNRS, Université Louis Pasteur, Strasbourg
1979: Maître de recherche CNRS, Université Louis Pasteur, Strasbourg
1990 : Directeur de recherche CNRS (1st class), Université Louis Pasteur, Strasbourg
2003: Directeur de recherche CNRS (Except. class), Université Louis Pasteur, Strasbourg

Awards and Honors

Chini Memorial Lecture (2003), Nyholm Medal and Lecture (2003), Member of the french Académie des Sciences (2005), Member of the German National Academy of Sciences Leopoldina (2005), Honorary Professor Chinese Academy of Sciences (Beijing, 2006), Descartes-Huygens Prize (Royal Netherlands Academy of Arts and Sciences and French Academy of Sciences) (2008)

Total Publications

(Reviews: 32; publications: 415; patents: 10), Citation (SCI): 10,624 (2011, August), h-index: 48

Research Interests

Fundamental and applied molecular chemistry, creation of new chemical bonds (metal-metal), of new complex molecules, elaboration of concepts rationalizing structure-reactivity relationships, applications in homogeneous catalysis (ethylene oligomerization, cooligomerization olefins/CO and ethylene/polar olefins, transfer hydrogenation of ketones, alkane activation, deshydrogenative coupling of stannanes), nanomaterials from molecular precursors, applications in heterogeneous catalysis (carbonylation of organic nitro derivatives to isocyanates).

Synthesis et complexation of polytopic functional ligands

New organic molecules with delocalized π systems (quinonoids)

Chemistry of functional enolates and their metal complexes (synthesis, characterization, reactivity, catalysis)

Synthesis and reactivity of bimetallic silyl complexes (new molecular interactions and catalysis)

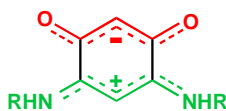
Molecular clusters (concepts, synthesis, structures, reactivity, catalysis).

Zwitterionic Iminoquinonoid Ligands and their Metal Complexes

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Functional nitrogen-containing ligands which associate chemically different donor atoms within the same molecule, are of considerable current interest owing to their implication in a number of chemical or physical processes, including the possibility to display hemilabile behaviour.¹ A new class of quinonoid zwitterions has been recently developed which provides insight into the synthesis and properties of unusual quinonoid molecules and their applications in coordination chemistry, organometallic chemistry and homogeneous catalysis.²



Their electronic structure has been investigated in relationship with their structural features and recent aspects of their reactivity towards transition metal will be highlighted.

Ongoing multidisciplinary applications dealing with the deposition of such molecules on surfaces will also be presented.³

- 1 P. Braunstein, F. Naud, *Angew. Chem. Int. Ed.* **2001**, *40*, 680; C. S. Slone, D. A. Weinberger, C. A. Mirkin, *Prog. Inorg. Chem.* **1999**, *48*, 233; A. Bader, E. Lindner, *Coord. Chem. Rev.* **1991**, *108*, 27.
- 2 (a) P. Braunstein, O. Siri, J.-P. Taquet, Q.-Z. Yang. Regioselective Carbon-Carbon Bond Formation Reactions Between TCNE or TCNQ and a Quinonoid Ring. *Angew. Chem. Int. Ed.* **2006**, *45*, 1393. (b) Q.-Z. Yang, A. Kermagoret, M. Agostinho, O. Siri, P. Braunstein. Nickel Complexes with Functional Zwitterionic *N,O*-Benzoquinonemonoimine-Type Ligands: Synthesis, Structures and Catalytic Oligomerization of Ethylene. *Organometallics*, **2006**, *25*, 5518. (c) P. Braunstein, O. Siri, P. Steffanut, M. Winter, Q.-Z. Yang. Synthesis and Properties of Copper Quinonoid Complexes for Optical Recording Application, *C. R. Chimie* **2006**, *9*, 1493. (d) J.-P. Taquet, O. Siri, P. Braunstein, R. Welter. Dinuclear Nickel and Palladium Complexes with Bridging 2,5-Diamino-1,4-Benzoquinonediimines: Synthesis, Structures and Catalytic Oligomerization of Ethylene. *Inorg. Chem.* **2006**, *45*, 4668. (e) O. Siri, J.-P. Taquet, J.-P. Collin, M.-M. Rohmer, M. Bénard, P. Braunstein. Tunable Charge Delocalization in Dinickel Quinonoid Complexes, *Chem. Eur. J.* **2005**, *11*, 7247. (f) Q.-Z. Yang, O. Siri, P. Braunstein. First Transamination Reactions for the One-Pot Synthesis of Substituted Zwitterionic Quinones. *Chem. Commun.* **2005**, 2660. (g) H. S. Das, A. K. Das, R. Pattacini, R. Hübner, B. Sarkar, P. Braunstein, First Structurally Characterised Mono- and Dinuclear Ruthenium Complexes Derived from Zwitterionic Quinonoid Ligands, *Chem. Commun.* **2009**, 4387. (h) A. Paretzki, R. Pattacini, R. Hübner, P. Braunstein, B. Sarkar, Stabilising a Quinonoid-Bridged Dicopper(I) Complex by Use of a dppf Backbone. *Chem. Commun.* **2010**, 1497. (i) N. Deibel, D. Schweinfurth, R. Huebner, P. Braunstein, B. Sarkar, "Double redox-activity" in azobenzene-quinonoid palladium(II) complexes: a combined structural, electrochemical and spectroscopic study, *Dalton Trans.* **2011**, *40*, 431. (k) T. Kauf, P. Braunstein, Contrasting behaviour of TCNE and TCNQ zwitterionic benzoquinonemonoimine derivatives and coordination of a tricyanoethenyl substituent to Pd(0). *Dalton Trans.* **2011**, in press.
- 3 J. Xiao, Z. Zhang, D. Wu, L. Routaboul, P. Braunstein, B. Doudin, Y. B. Losovyj, O. Kizilkaya, L. G. Rosa, C. N. Borca, A. Gruverman, P. A. Dowben, The interface bonding and orientation of a quinonoid zwitterion. *Phys. Chem. Chem. Phys.* **2010**, *12*, 10329. Z. Zhang, J. Alvira, X. Barbosa, L. G. Rosa, L. Routaboul, P. Braunstein, B. Doudin, P. A. Dowben, Lock and Key Adsorption Chemistry: Preferential Absorption of an Isomer of Di-iodobenzene on Molecular Films of Quinonoid Zwitterions, *J. Phys. Chem. C*, **2011**, *115*, 2812.