



ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Curriculum Vitae	3 - 8
Main research interests	9 - 22
Involvements in innovative companies and applications	23 - 25
Edition	26 - 32
International collaborations	34 - 35
Publications	36 - 61
Patents	62 - 66
Lectures	67 - 81
Direction of works	82 - 86

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Curriculum Vitae

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Curriculum Vitae

Laboratory address

Institut de Chimie Moléculaire de l'Université Bourgogne Europe (UMR CNRS 6302), 9 avenue Alain Savary, BP 47870, 21078 Dijon Cedex, France – Tél. : +33 3 80 39 61 11. Mail: roger.guilard@u-bourgogne.fr

Roger Guilard is a Professor of Chemistry at the University of Burgundy in France. He received the « Agrégation de Sciences Physiques » Degree in 1966 and his Ph.D. in heterocyclic chemistry in 1971 from the University of Dijon. He was a Visiting Professor of Chemistry at the University of Houston in 1985 and again in 1987. He was also a Visiting Scientist in China and Japan. He has received the Coordination Chemistry Award from the French Chemical Society (1978) and two Awards (1991, 1997) from the French Academy of Sciences. He received the “**Grand Prix de l'Académie des Sciences, Prix Gaz de France**” in 2001 and the “**Robert Burns Woodward Career Award in Porphyrin Chemistry**” in 2010. He was elected as a fellow of the **European Academy of Sciences in 2011** and as a fellow of the **Academia Europaea in 2015**. He received the “**Grand Prix Emile Yungfleisch de l'Académie des Sciences**” in 2013. He co-edited two series of 10 volumes published in 1999 and 2003 (Handbook of Porphyrins). **He is the co-editor of nine sets of 5 volumes (Handbook of Porphyrin Science), and he is currently co-editing a series of five volumes. He is also currently co-editor-in-chief of two new series of five volumes entitled « Chemistry, Energy and Environment » and « From Materials towards Biomaterial Devices ».** He was a JSPS Fellow in 2008. He was an Associate Editor of Dalton Transactions, and he is a member of the Editorial Board of the Journal of Porphyrins and Phthalocyanines. **He is the author of 489 papers and reviews and has been awarded 23 patents in the areas of heterocyclic chemistry, organometallic chemistry, coordination chemistry, and materials.** His significant contributions span both basic research and applications.

In addition to the synthesis and structural characterization of metalloporphyrins and the biomimetic modelling of metalloenzymes, the second line of research focuses on the preparation and physico-chemical characterization both in solution and in the solid state of transition, post-transition, lanthanide, and actinide metal complexes formed with saturated and unsaturated polyazamacrocycles. Grafted and sol-gel immobilised complexes are used as specific adsorbents to detect (CO, H₂) and purify (O₂/N₂) gases. Similar functionalised materials (silica-gels, polymer fibers) are also implemented in heavy metals' solid/liquid extraction processes (Pb, Cd, actinides). Molecular organic frameworks are studied as adsorbents of CO₂ and molecular interfacial catalysts are synthesized for CO₂ reduction.

His current interest is in the use of porphyrin-based fluorophores for PDI (photodynamic inactivation) applications.

EDUCATION

- | | |
|------|------------------------------------|
| 1966 | "Agrégation de Sciences Physiques" |
| 1971 | Ph.D. Organic Chemistry |

PROFESSIONAL EXPERIENCE

- | | |
|------------|--|
| 1972-73 | Post-doctoral fellow, University of Basel (Switzerland), Darmstadt (Germany) |
| 1978-1979 | Associate Professor of Chemistry, Dijon (France) |
| since 1979 | Professor of Chemistry, Dijon (France) |

CREATIVE WORKS

23 patents, 488 publications, 88 books, 183 lectures

MAIN FIELD OF RESEARCH

Bio-inspired systems

Syntheses of porphyrinic and corrollic models

Syntheses of polyazamacrocyclic ligands (cyclam, cyclen)

Syntheses of nanomaterial molecular precursors - Optimization of synthetic procedures

Ultrapurification and detection of gases. Organic-inorganic materials and modified silica

Sol-gel materials - Carrier/separation of gases (O₂, N₂, CO, CO₂ ...)

Molecular catalysts for CO₂ reduction

Polyazamacrocyclic sequestering agents

Treatment of wastewater (saturnism). Solid/liquid extraction process for the ultimate decontamination of wastewater containing heavy metals (uranium, plutonium, americium, ...)

Crystallography. Molecular modelling.

X-ray studies - Molecular modelling - Electron density analyses

Syntheses of Photosensitizers

CAREER-RELATED ACTIVITIES

1980-1982	Director of the Chemistry Department (Dijon)
1989-1991	Director of the Chemistry Department (Dijon)
1982-2003	Director of the Center of Molecular Spectrometry
1992-1998	Director of the "Ecole Doctorale Louis Pasteur des Universités de Bourgogne et de Franche-Comté"
1992-1999	Director of the "Laboratoire de Synthèse et d'Electrosynthèse Organométalliques" LSEO (UMR 5632)
1993-2006	Director of the "Laboratoire d'Ingénierie Moléculaire pour la Séparation et les Applications des Gaz" LIMSAG (UMR 5633)

AWARDS AND HONORS

1978	Prize from the French Chemical Society, Coordination Chemistry Division
1984	Visiting Professor, University of Houston (USA), 3 months
1986, '87, '90	Visiting Professor, University of Houston (USA), 1 month
1991	Prize from the "Académie des Sciences" (Marguerite de la Charlonie Prize)
1991	Visiting Research Scientist in China (Beijing, Shanghai, Changchun), 1 month

1993, 1994	Visiting Research Scientist in China (Changchun), 1 month
1995	Visiting Research Scientist in Japan (Kyoto, Tokyo, Hiroshima), 2 weeks
1997	Prize from the “Académie des Sciences” (Paul Langevin Prize)
1999	Prize presented by the Association of American Publishers “Awarded for Excellence in Professional/Scholarly Publishing for 1999, Professional and Scholarly Division, in the Chemistry Category” on the occasion of the publication of the 10 volumes series entitled “ <i>Handbook of Porphyrins and Related Macrocycles: Biomaterials for Material Scientists, Chemists, and Physicists</i> ”
1999	“Commandeur de l’Ordre des Palmes Académiques”
2001	“Chevalier de l’Ordre National du Mérite”
2001	“Grand Prix de l’Académie des Sciences” (“Gaz de France” applications Prize)
2001	Honoris Causa Doctor of the University of Sherbrooke (Canada)
2008	Japan Society for the Promotion of Science (JSPS) fellow
2010	Robert Burns Woodward Career Award in Porphyrin Chemistry , International Conference on Porphyrins and Phthalocyanines (ICPP-6)
2011	Fellow of the European Academy of Sciences
2013	“Grand Prix Emile Jungfleish” from the Académie des Sciences
2015	Fellow of the Europaea Academy

INVOLVEMENT IN INNOVATIVE COMPANIES

- Founding and consulting of two innovative companies:
in 2005: Creation of **CheMatech** based on the know-how of LIMSAG-UMR CNRS 5633.
in 2013: Creation of **PorphyChem** built up around the know-how of LIMSAG-UMR CNRS 5633 and then after ICMUB-UMR CNRS 6302.
- President of the Advisory Board of LARS Company (Ligament Advanced Reinforcement Systems (2012 - 2021).
- President of the Incubator of the Burgundy Region (from 2007 - 2016).

EXPERTISE ACTIVITIES

1996-1997	Member of the Groupe d'expert n° GP 222 de la Mission Scientifique et Technique du Ministère de l'Education Nationale, de l'Enseignement Supérieur et de la Recherche
1994-1998	Member of the “Conseil National des Universités (32 ^{ème} Section)”
1996-1998	Rapporteur Général Adjoint auprès du Comité Consultatif Régional de la Recherche et du Développement Technologique (CCRDT)
1999-2001	Rapporteur Général auprès du Comité Consultatif Régional de la Recherche et du Développement Technologique (CCRDT)
1997-1998	Assistant director of the “Département de Chimie, Ministère de l’Enseignement Supérieur, de la Technologie et de la Recherche”

- 1999-2006** Scientific Director of the Département de Chimie, Ministère de l'Enseignement Supérieur, de la Technologie et de la Recherche
- 2006-2009** Directeur délégué pour le partenariat avec les collectivités territoriales, Centre National de la Recherche Scientifique, Direction des partenariats
- 2010-2012** Conseiller après de la Direction du CNRS pour le Grand Emprunt

MEMBERSHIPS

- American Chemical Society
- French Chemical Society
- Royal Chemical Society
- Society of Porphyrins and Phthalocyanines
- 1996-2020 Member of the “Editorial Board of the Journal of Porphyrins and Phthalocyanines”
- 1996-2002 Member of the “Editorial Board of the Journal of the Royal Chemical Society, Dalton Transactions”
- 1996-2002 Associate Editor of the “Journal of the Royal Chemical Society, Dalton Transactions”
- 1997-2002 Member of the “Editorial Board of the New Journal of Chemistry”

SCIENTIFIC EDITOR

- **“Handbook of Porphyrins and Related Macrocycles: Biomaterials for Material Scientists, Chemists, and Physicists”**

Academic Press, Karl M. Kadish, Kevin M. Smith and Roger Guilard, co-editor of a series of 10 volumes, December 1999

- **“Porphyrin Handbook, Part II”**

Academic Press, Karl M. Kadish, Kevin M. Smith and Roger Guilard, co-editor of a series of 10 volumes, March 2003

- **Dalton Transactions, web theme issue “Carbon Dioxide at Metal Centres”**

Guest editor, July 2007

- **Comptes Rendus Chimie, special issue “Nuclear Energy and Radiochemistry”**

Guest editor, October-November 2007, Volume 10

- **“Handbook of Porphyrin Science with Applications to Chemistry, Physics, Materials Science, Engineering, Biology and Medicine” (50 volumes)**

Imperial College/World Scientific, Karl M. Kadish, Kevin M. Smith and Roger Guilard, co-editor of ten sets of five volumes:

- 2 first sets were published in 2010,
- third set published in 2011,
- fourth and fifth sets published in 2012
- sixth set published in 2013
- seventh set published in 2014
- eighth and ninth sets published in 2016 and 2019
- the tenth set published in 2022 and 2025

He is also currently co-editor-in-chief of two new series entitled « **Chemistry, Energy and Environment** » and « **From Materials towards Biomaterial Devices** »

ORGANIZATION OF NATIONAL AND INTERNATIONAL MEETINGS

- Concoord XIV, 1982
- Organization of "Les journées de l'Ecole Doctorale Louis Pasteur", 1992-1998 (annual)
- "Journées de la Division de Chimie de Coordination" of the French Chemical Society, 1995-1998 (annual)
- International Conference on Porphyrins and Phthalocyanines (ICPP-1), 2000 (650 participants)

RESEAU INTERNET

- Biography <http://www.icmub.com/en/members-en/guilard-roger.html>
- LinkedIn <https://www.linkedin.com/in/roger-guilard-15593725/>
- Wikipedia https://en.wikipedia.org/wiki/Roger_Guilard
- Research Gate <https://www.researchgate.net/profile/Roger-Guilard>
- Google Scholar <https://scholar.google.com/citations?user=HUoVyCYAAAAJ&hl>
- EURASC <https://www.eurasc.eu/members/roger-guilardu-bourgogne-fr/member/>
- Academia Europae https://www.ae-info.org/ae/Member/Guilard_Roger
- ORCID <https://orcid.org/0000-0001-7328-3695>
- Scopus <https://www.scopus.com/authid/detail.uri?authorId=7005221303>
- Who's Who in France https://www.whoswho.fr/bio/roger-guilard_74313
- CheMatech <https://www.chematech-mdt.com>
- PorphyChem <https://www.porphychem.com/en/about-us/scientific-advisory-board/4>

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Main research interests

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Main research interests

1) Models mimicking the interaction of oxygen with some hemoproteins.

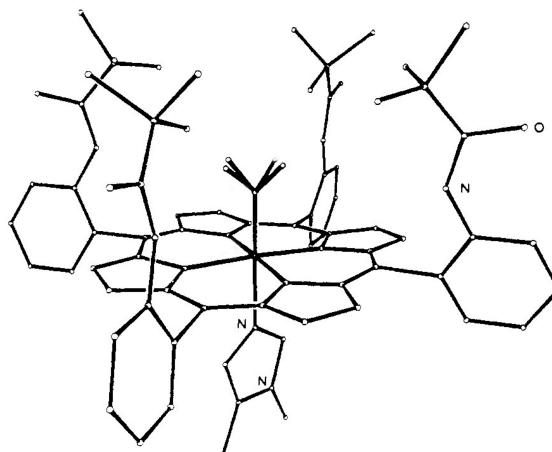
During the seventies, much work has been devoted to synthetic analogues of the hemoproteins that are involved in the transport and activation of molecular oxygen. These researches were directed towards a better understanding of the bonding and reactivity of the dioxygen ligand in the biological systems.

A major breakthrough was obtained by Collman in the isolation and X-ray structure determination of the dioxygen adduct of a ferrous “picket fence” porphyrin. The bonding of O₂ in this complex is well described by the superoxide formalism Fe^{III}(O₂⁻). Similar dioxygen adducts have also been obtained with Co(II) and Cr(II) porphyrins. The peroxide formalism M^{IV}(O₂²⁻) has only been suggested for the manganese complex.

We have prepared the peroxotitanium (Por)Ti^{IV}O₂ complexes in a number of reactions using the oxotitanium(IV) porphyrins as precursors. Reactions of benzoyl peroxide or hydrogen peroxide under mild conditions enabled the corresponding peroxotitanium complexes. These peroxo derivatives have been studied by crystallography.

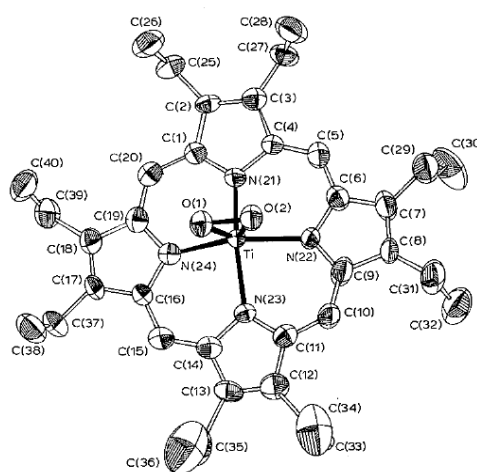
We have obtained the first peroxometalloporphyrin with dioxygen symmetrically bonded by both atoms (*Inorg. Chem.* 1978, 17, 228).

Picket fence porphyrin



Superoxide M^{III}(O₂⁻) when M = Fe, Co, Cr
Peroxide M^{IV}(O₂²⁻) when M = Mn

Stereoscopic view of (OEP)Ti^{IV}(O₂)



Electrochemistry and spectroelectrochemistry of all the synthesized σ bonded iron aryl and alkyl porphyrins have been studied. **Our work presents the first overall mechanism to explain the migration reactions of oxidized σ bonded iron porphyrins** (*J. Am. Chem. Soc.* **1984**, 106, 4472).

3) Pacman porphyrins.

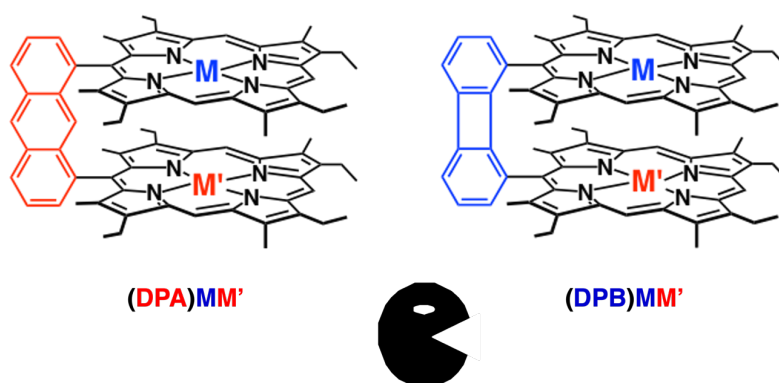
The increasing interest on fuel cells has induced the development of many academic research programs. The advantages of fuel cells are the decreasing of the pollution and increasing of the energy yield. The proposals are mainly focussed either on processes using lower quantities of platinum or on the synthesis of new catalysts.

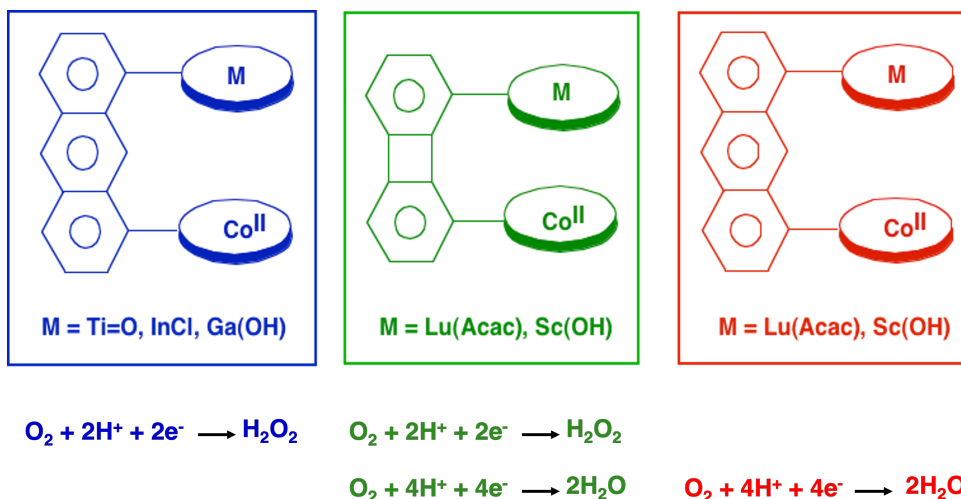
Moreover the role of metalloenzymes in major biological transformations has induced an increasing interest over the last decades to develop such catalysts and we have synthesized and studied bimetallic models of cytochrome *c* oxidase mimicking the Cu-Fe enzyme which catalyses the direct four electron reduction of O₂ to H₂O.

We have studied Pacman porphyrins which can mimic the cytochrome *c* oxidase in the four electron reduction of dioxygen (*J. Am. Chem. Soc.* **1992**, 114, 9869 et 9877; id **1994**, 116, 10202; id **1995**, 117, 11721; *Inorg. Chem.* **2009**, 48, 7613).

Pacman porphyrins are based on a design in which two porphyrins are bridged via a rigid spacer group such as an anthracene or biphenylene. In principle, these face-to-face porphyrins could be efficient catalysts for the reduction of O₂ to H₂O.

We have studied several homo- and heterobimetallic Pacman porphyrins for the multielectron reduction of O₂.





When (DPA)Co-Lu(acac) and (DPA)Co-Sc(OH) are used as catalysts, dioxygen is reduced according to a 4e mechanism. Dioxygen is reduced concurrently by the 2 and 4 electron mechanism for (DPB)CoLu(acac) and (DPB)Co-Sc(OH). For the titanium, indium and gallium (DPA) complexes, the dioxygen reduction corresponds to a pure 2e mechanism.

The structural parameters and the composition of models capable of reducing O₂ via a four electron process can be summarized as follows:

- bimetallic complexes are required,
- metal-metal distance must facilitate a cooperative effect,
- choice of the metal is a determining factor,
- effective models are obtained by opposing Co(II) to a strong Lewis acid metal.

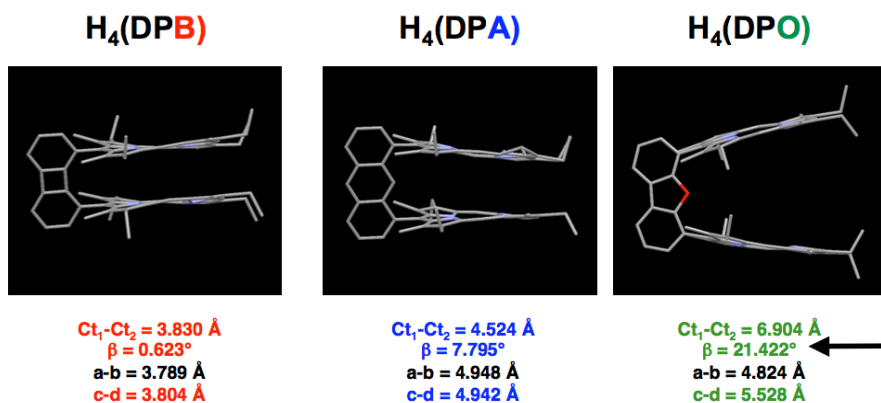
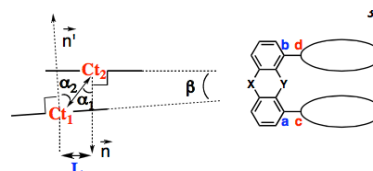
4) Models of photosystems I and II.

To elaborate biomimetic models of photosystems I and II, we have studied Pacman porphyrins systems exhibiting various geometries and spacers as special pairs. The role of the spacer on the structural parameters can be clearly illustrated from the X-ray structures of the free-base bisporphyrins H₄(DPB), H₄(DPA) and H₄(DPO).

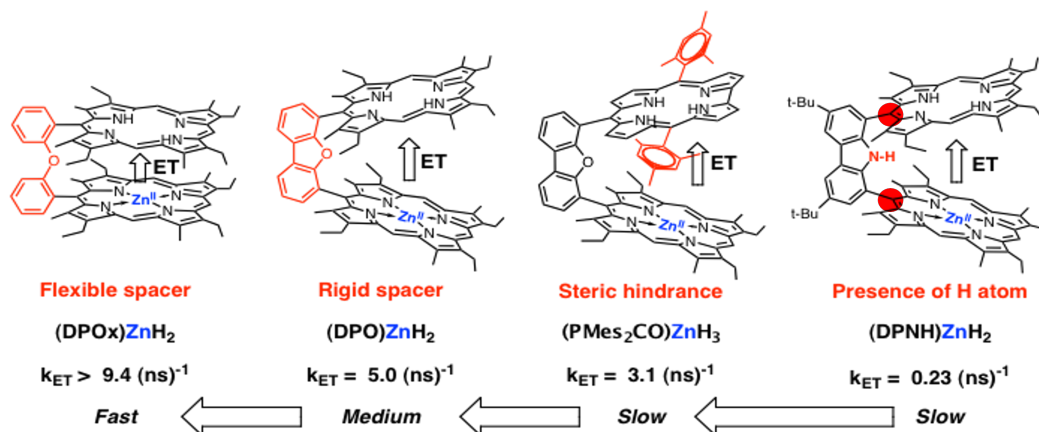
The Ct-Ct macrocycle centers and c-d distances increase from 3.83 and 3.80 Å starting from H₄(DPB) to 6.90 and 5.53 for H₄(DPO). In the case of the dibenzofuran bisporphyrin, a significantly greater β interplanar angle is observed compared to H₄(DPB) and H₄(DPA). These data are consistent with the quasi-parallel geometries in the case of H₄(DPB) and H₄(DPA) and with « open mouth » geometries in the case of H₄(DPO). They also illustrate the so-called “Pacman” effect and show the remarkable flexibility of the geometry of these series.

The singlet-singlet energy transfer from a photoexcited zinc porphyrin to a free-base porphyrin or corrole subunit using picosecond fluorescence spectroscopy has been studied. **The measurements of the fluorescence lifetimes were performed** (*Coord. Chem. Reviews* **2007**, *25*, 401; *Inorg. Chem.* **2008**, *47*, 9930; *J. Inorg. Biochemistry* **2008**, *102*, 395; *Handbook of Porphyrin Science*, Volume 15, 2011).

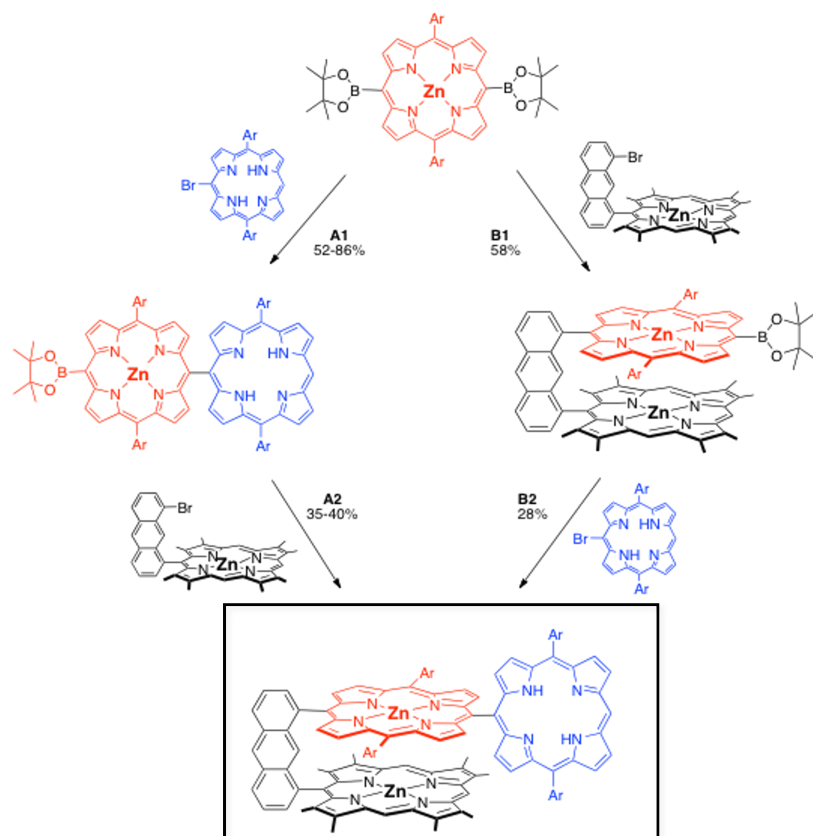
X-ray structures of bisporphyrins
quasi-parallel and open mouth geometries



It is interesting to focus the observed data on four pacman derivatives. The presence of a bulky group located between the acceptor and the donor moiety influences the transfer rate. With respect to the porphyrin-corrole dyads, the presence of perpendicular mesityl groups on the acceptor macrocycle prevents the two macrocycles from interacting strongly, therefore the transfer rate k_{ET} is slower. On the other hand, by rendering the rigid spacer flexible (*i.e.* changing the dibenzofuran rigid spacer by the flexible diphenylether assembling fragment), k_{ET} increases due to stronger intermacrocycle interactions. The slower rate observed in the case of the carbazoyl spacer can be explained by the presence of the H-atom located exactly between the two meso-carbons in the dyads.



Our studies were also directed towards a trisporphyrin formed by an artificial special pair which was constructed with an anthracenyl spacer, a zinc- β -octamethyl porphyrin (donor 2) and a zinc-diaryl-meso porphyrin (donor 1). The third component – the acceptor – is a diaryl-meso-porphyrin free-base (Organic Letters, **2010**, 12, 196).



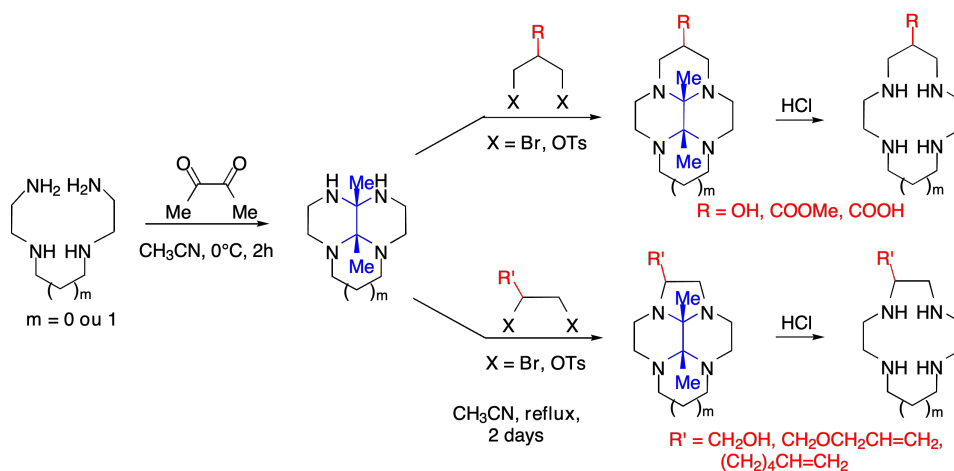
We have shown that **strong donor-acceptor couplings occur in a special Pair-Antenna model where the artificial pair is constructed with an electron donor $Mg_2(DPB)$ unit and a free base to mimic the electron acceptor**. This system exhibits a spectacular role reversal with respect to the anthracene trimer where the ET now occurs from the free base to the free cofacial unit.

5) Study of tetraazamacrocycles: cyclen and cyclam.

The tetraazacycloalkanes, and mainly the cyclen, have been widely used in medicine as a magnetic resonance imaging contrast agent. For example, the DOTAREM, which is a gadolinium complex of a cyclen bearing four acetate arms, is a contrast agent. Such derivatives are also used in radioimmunotherapy.

We have developed a **convenient synthesis of C-functionalized tetraazamacrocycles based on the use of a bisaminal intermediate resulting from the action of butanedione** (Patent WO 03/09228, 27-09-2002).

The bisaminal intermediate is cyclised with this biselectrophilic C-functionalized compound. After deprotection, we have obtained various C-functionalized macrocycles. We can note several advantages: these derivatives are obtained directly starting from the linear tetraamine. The method is general since it is efficient for cyclam, cyclen and this non symmetrical macrocycle. The yields are rather good: 70 to 80% for these various series. Moreover, the cyclisation reaction occurs in concentrated mixture and the deprotection occurs under mild conditions, the present organic function can be preserved.



Advantages

- precursor = linear tetraamine
- general route : cyclam, cyclen, 13aneN4
- good yields
- concentrated medium (0.2 mol.L⁻¹)
- very easy conditions of deprotection

Regioselective C-functionalization of tetraazacycloalkanes

We have also developed a selective synthesis of monosubstituted macrocycles and an original route to trans disubstituted cyclam derivatives (*Eur. J. Org. Chem.* **1998**, 1971; *Tetrahedron Lett.* **1999**, 40, 2315; *Synlett* **2000**, 561; *Chem. Comm.* **2002**, 312; *Chem. Comm.* **2006**, 5054).

6) Elaboration of nanomaterials for the ultrapurification or the detection of gases.

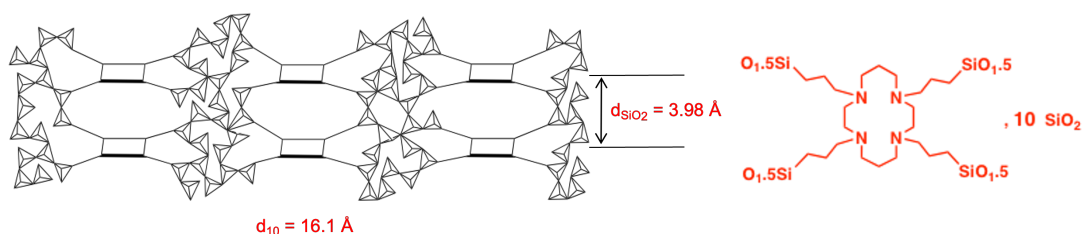
It is possible to use tetraazacycloalkanes in other domains such as catalysis or molecular recognition. For our part, we have utilized these macrocycle derivatives in solid-liquid extraction processes for the total decontamination of nuclear waste water containing

uranium, plutonium and americium. Moreover, we have also used these macrocycles to eliminate lead from water or both lead and cadmium from industrial waste water.

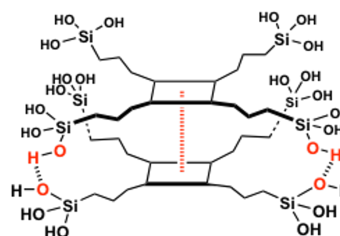
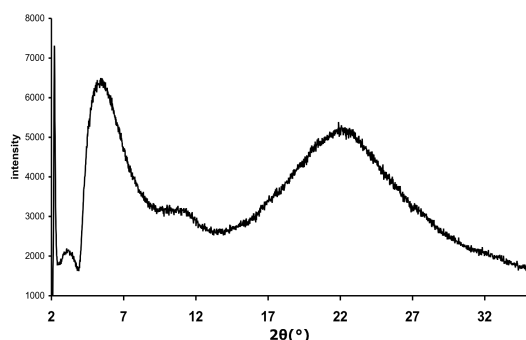
We have also used tetraazamacrocycles so as to achieve the ultrapurification or the detection of gases. Indeed, some metallic complexes of these cyclic amines show a great affinity for gas molecules, as is the case with the cobalt(II) cyclam for dioxygen. Our project consists in the immobilization of the active species on a solid support, such as silica gel, which might stabilize the oxygenated species. When a stable oxygenated species is formed, no irreversible oxidation occurs and the regeneration of the active species becomes easier. The incorporation of nitrogenated macrocycles in solid by the sol-gel process **also** leads to a new coordination chemistry of these systems inside the solid matrix. Indeed, the organization of the macrocycles in the solid induces peculiar properties of main interest for the ultrapurification of gases.

These materials possess a structuration at a nanometric scale in the walls due to Van der Waals interactions and hydrogen bonding between the macrocycles.

The long range structuration is remarkable because it cannot be observed for the materials prepared with the same ligand but according to the classical sol-gel method, *i.e.* without surfactant. The xerogel derivatives only show a nanoorganization, which is weaker compared to PMOs because the first diffraction peaks recorded by XRD at higher degrees exhibit broad signals of lower intensity.



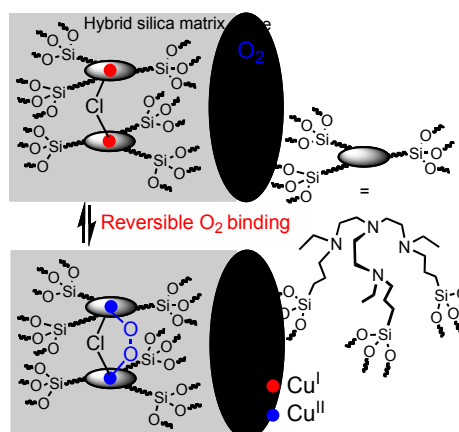
Anisotropic organization of the solid in the walls: **short range lamellar order**



Self-organization thanks to hydrogen bonds and **hydrophobic interactions** between macrocycles during the hydrolysis step

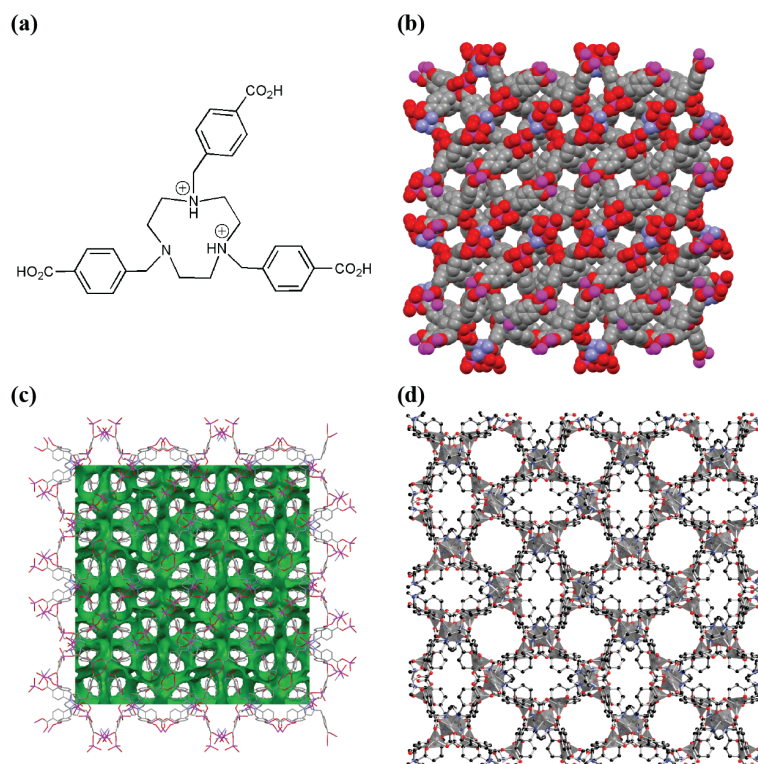
The fixation of O₂ by this mesostructured material is more reversible than for the corresponding not organized xerogels.

We have also observed the same reversible coordination of O₂ for a material formed with metallic TREN (*Chem. Eur. J.* **2010**, 16, 6352).



7) Selective CO₂ adsorption by triazacyclononane-bridged microporous metal-organic framework.

Metal-organic frameworks constructed by self-assembly reaction between metal ions and organic linkers have recently been of great interest in the preparation of porous hybrid materials with a wide variety of functions. Despite much research in this area and the large choice of building blocks used to fine-tune the pore size and structure, it remains a challenge to synthesize frameworks, built with polyamines, in order to tailor the porosity and adsorption properties for CO₂. We have described a three dimensional microporous metallorganic framework with the formula [Zn₂(L)(H₂O)]Cl, which comprises dinuclear cluster units and is built through a one-pot solvothermal reaction between zinc ions and cyclic polyaminocarboxylates (L = 1,4,7-tris(4-carboxybenzyl)-1,4,7-triazacyclononane). We have demonstrated for the first time that a porous rigid framework can be obtained starting from a flexible amine building block. Sorption measurements revealed that the material exhibits a high surface area (1.350 m².g⁻¹) and is the best compromise between capacity and selectivity for CO₂ over CO, CH₄, N₂ and O₂; as such it is a promising new selective adsorbent for CO₂ capture. (*Chem. Eur. J.* **2011**, *17*, 6689)



Structural features. **a**, Chemical structure of the building block LH_5^{2+} . **b**, Packing view of the MOF along the crystallographic ab plane. **c**, 3D pore channel along the crystallographic ab plane. Green spaces represent the inside of the channel. **d**, View of the channels along the crystallographic ab plane showing the coordination polyhedra (tetrahedron and octahedron).

8) Works carried out in the frame of the International Associated French-Russian Laboratory of Macrocyclic Systems and Related Materials (LAMREM) of CNRS and Russian Academy of Science (2011-2018).

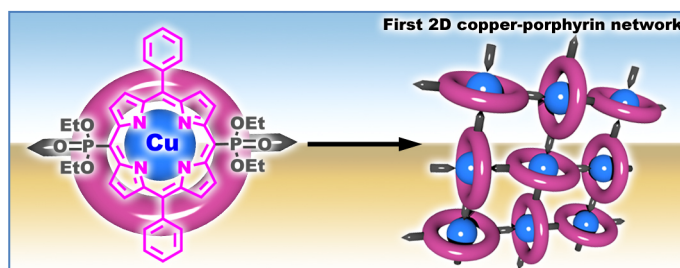
These works are directed mainly towards the synthesis of porphyrin phosphonates and the elaboration of porous materials for catalysis.

Synthesis of porphyrin phosphonates and meso aryloxy and alkoxy-substituted porphyrins and their complexes.

Only a few syntheses of porphyrins bearing a C-P bond at the periphery of the macrocycle were described due to the limited availability of an appropriate synthetic method. We have shown that the transition metal-catalyzed C-P cross coupling reaction of meso- or beta-halogenoporphyrins led to new series of A_4 , A_3B and A_2B_2 types porphyrins. The self assembling of the phosphoryl Zn(II) and Cu(II) porphyrins leads to 1D and 2D networks. Moreover the new A_3B type phosphorylated porphyrins are a priori excellent precursors in order to construct efficient DSSCs and to develop photocatalysts. (*Org. Lett.* **2009**, 11, 3842; 52, 999; *Phosphorus Sulfur Silicon*

Relat. Elem. **2015**, 190, 831)

We have reported the first example of copper (II) meso-phosphorylated porphyrins that coexist as isolated molecules and 2D coordination polymers in the solid state (*Inorg. Chem.* **2013**, *52*, 999)



Copper (II) porphyrins bearing diethoxyphosphoryl groups at *meso* positions gives a 2D coordination network.

A series of RO- appended porphyrins were also synthesized in good yields from 5,15-dibromoporphyrins by using S_NAr reaction. This reaction is a good alternative to transition-metal-catalyzed C-O bond forming reactions. These compounds are a priori of interest for the preparation of push pull porphyrins and organized thin-film materials. (*Eur. J. Org. Chem.* **2015**, 5610)

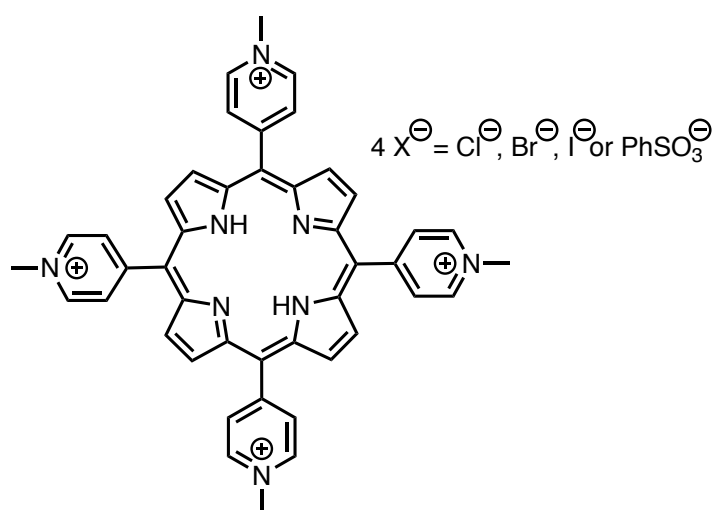
Elaboration of hybrid organic-inorganic materials using phosphonates as precursors.

Functionalized materials for gas separation, detection and catalytic applications have been prepared by using immobilization of phosphonates on porous inorganic matrices, sol-gel process or coordination-driving assembling. Titania was preferred as an inorganic support for the grafting and sol-gel process due to its unique photophysical properties and mild conditions needed for the fabrication of hybrid organic-inorganic materials. As an example catalytic properties of titania modified by Mn(III) 5-diethoxyphosphoryl-10,15-di(tolyl)porphyrinate were studied in the oxidation of alkenes. It has been shown that this material is an efficient and reusable catalyst for the oxidation of alkenes by oxygen.

9) Works carried out in the framework of PorphyChem.

A review has been dedicated to the applications of porphyrins and related systems in photodynamic therapy (PDT), photoimmunotherapy (PIT) and photodynamic inactivation (PDI). The will of this review is to illustrate the various aspects of the activities of the company by choosing some applications where PorphyChem is mainly involved (*Photochem.Photobiol.* **2018**, *17*, 1675). A recent review shows that porphyrin-based fluorophores are remarkable dye candidates for PDI (photodynamic inactivation) applications. These are the main directions of several research programs which are underway (*J. Porphyrins Phthalocyanines*, **2021**, *25*, 359).

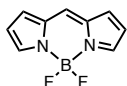
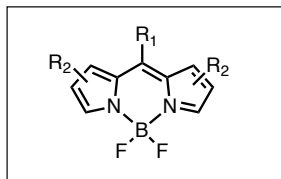
Current electrochemical studies are related to the cationic free base tetra-*N*-methylpyridylporphyrins (TMPyP). These derivatives are able to selectively stack as G-tetrads that stabilize quadruplex DNA resulting in the inhibition of telomerase. The influence of two counterions (Cl⁻ and tosylate) on the binding properties of the TMPyP with G-quadruplex has also been studied. All these properties explain why these derivatives were further explored as



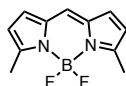
Structure of TMPyP

therapeutic, anti-angiogenic and antimicrobial drugs. Despite the obvious interest of these porphyrins, only few investigations have focused the role of anions in the electrochemistry of this series. We are currently studying the spectroscopic and electrochemical properties of TMPyP with different counteranions (Cl⁻, Br⁻, I⁻ or PhSO₃⁻).

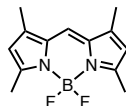
A third research topic is devoted to the study of the influence of substituents on photophysical properties and photostability of BODIPYs.



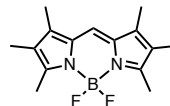
Absorption = 499 nm
Emission = 535 nm, $\Phi = 0.93$
EtOH



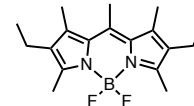
Absorption = 507 nm
Emission = 520 nm, $\Phi = 0.81$
EtOH



Absorption = 505 nm
Emission = 516 nm, $\Phi = 0.80$
EtOH



Absorption = 528 nm
Emission = 535 nm, $\Phi = 0.56$
EtOH



Absorption = 517 nm
Emission = 546 nm, $\Phi = 0.70$
EtOH

BODIPYs

Literature data show that peripheral substituents R_2 give rise to bathochromic shifts for all the studied compounds but the effect from electron-donating substituents is slightly stronger compared to electron acceptors. It has also been shown that the substitution of all R_1 and R_2 positions increase the photostability of the BODIPYs. Our objective is to find a process of designing novel functional BODIPYs exhibiting given spectroscopic data and a good photostability by computational analysis (*Molecules*, **2021**, *26*, 1781).

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Involvements in innovative companies and applications

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Involvements in innovative companies and applications

I am involved in 23 patents in the area of tetraazamacrocyclic chemistry, coordination chemistry and materials.

1) Decontamination of liquid wastes containing uranium, plutonium and americium.

The goal of our research program consisted of elaborating sequestering agents able to selectively coordinate the uranium, plutonium, and americium radioactive elements to obtain the ultimate decontamination of liquid wastes. The process is described in three patents, particularly in WO 2008/0099114, 14/01/2008. On the basis of the laboratory's data, we have constructed a semi-plant in order to treat higher quantities of liquid waste. We have also assembled a **Mobil Process Unit which can treat 500 m³ of wastewater. Such Mobil Process can also be used to sequester heavy metals, *i.e.* Cd, Pb, Hg... resulting from accidental pollution.**

2) A process to remove lead from drinking water.

Functionalized materials (silical gels, polymers fibers) implemented in a solid-liquid extraction process make it possible to remove lead from drinking water (Patents WO 01/46202, 12-12-2000 and WO 2009/112736, 20-02-2009).

3) Carbon monoxide sensor.

To elaborate on a CO sensor we have chosen a molecular approach using the cobalt(III) corroles that can selectively bind CO towards O₂ as a sensing device for CO detection (Patent WO 03/011865 19-07-2002).

4) Involvement in innovative companies.



I am a co-founder of CheMatech created in 2005 and built up around the know-how of LIMSAG-UMR CNRS 5633. This company is specialized in the design and synthesis of macrocyclic polyamines, such as DOTA derivatives used for **medical imaging** (Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), and Single Photon Emission Computed Tomography (SPECT)). CheMatech was built around the knowledge acquired in the field of macrocyclic polyamines chemistry for over 15 years by our research group.

<http://www.chematech-mdt.com>



I was appointed President of the Advisory Board of LARS over the period 2012-2021. This company fabricates artificial ligaments which are non-active surgical implants to compensate for the loss of natural ligaments or to serve as reinforcement.

<http://www.lars-ligaments.com/about-us/>



I am a co-founder, consultant and President of the Scientific Advisory Board of PorphyChem created in 2013 and built up around the know-how of LIMSAG-UMR CNRS 5633, then after ICMUB-UMR CNRS 6302.

PorphyChem® is a chemical company specializing in the synthesis of chromophores and fluorophores such as porphyrins, phthalocyanines and related compounds. The PorphyChem products are key precursors for research and industrial use in the fields of health, environment and energy.

The mission of PorphyChem® aims to help its industrial and academic customers to reach their goals while improving quality, reducing global costs and saving time. In this sense, PorphyChem® offers a large panel of products and services to fulfill both industry and research needs.

<http://www.porphychem.com>

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Edition

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Edition

With Karl M. Kadish and Kevin M. Smith, we have been and are co-editors of two main publications:

- **Handbook of Porphyrins**: two series of 10 volumes published in 1993 and 2003;
- **Handbook of Porphyrin Science with Application to Chemistry, Physics, Materials Science, Engineering, Biology, and Medicine**: ten sets of five volumes have already been published :
 - 2 first sets published in 2010,
 - third set published in 2011,
 - fourth and fifth sets published in 2012
 - sixth set published in 2013
 - seventh set published in 2014
 - eighth and ninth sets published in 2016 and 2019
 - the tenth set published in 2022 and 2025

More details at http://www.worldscibooks.com/series/porsci_series.shtml

I am also co-editor-in-chief of two new series of five volumes (World Scientific/Imperial College):

- **Chemistry, Energy and Environment**

More details at <http://www.worldscientific.com/series/scee>

- **From Materials towards Biomaterial Devices**

More details at <http://www.worldscientific.com/series/fbmd>

HANDBOOK OF PORPHYRINS AND RELATED MACROCYCLES

1. "Handbook of Porphyrins and Related Macrocycles. Volume 1, Synthesis and Organic Chemistry", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 421 pages.
2. "Handbook of Porphyrins and Related Macrocycles. Volume 2, Heteroporphyrins, Expanded Porphyrins and Related Macrocycles", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 405 pages.
3. "Handbook of Porphyrins and Related Macrocycles. Volume 3, Inorganic, Organometallic and Coordination Chemistry", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 425 pages.
4. "Handbook of Porphyrins and Related Macrocycles. Volume 4, Biochemistry and Binding : Activation of Small Molecules", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 345 pages.

5. "Handbook of Porphyrins and Related Macrocycles. Volume 5, NMR and EPR ", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 345 pages.
6. "Handbook of Porphyrins and Related Macrocycles. Volume 6, Applications : Past, Present and Future", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 346 pages.
7. "Handbook of Porphyrins and Related Macrocycles. Volume 7, Applications : Theoretical and Physical Characterization", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 427 pages.
8. "Handbook of Porphyrins and Related Macrocycles. Volume 8, Applications : Electron Transfer", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 205 pages.
9. "Handbook of Porphyrins and Related Macrocycles. Volume 9 , Database of Redox Potentials and Binding Constants", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 419 pages.
10. "Handbook of Porphyrins and Related Macrocycles. Volume 10 , Database of Tetrapyrrole Crystal Structure Determination", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2000), 254 pages.
11. "Handbook of Porphyrins and Related Macrocycles. Volume 11 , Bioinorganic and Bioorganic Chemistry ", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 276 pages.
12. "Handbook of Porphyrins and Related Macrocycles. Volume 12 , The Iron and Cobalt Pigments : Biosynthesis, Structure and Degradation ", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 223 pages.
13. "Handbook of Porphyrins and Related Macrocycles. Volume 13 , Chlorophylls and Bilins : Biosynthesis, Synthesis and Degradation ", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 272 pages.
14. "Handbook of Porphyrins and Related Macrocycles. Volume 14 , Medical Aspects of Porphyrins", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 338 pages.
15. "Handbook of Porphyrins and Related Macrocycles. Volume 15 , Phthalocyanine Synthesis", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 364 pages.
16. "Handbook of Porphyrins and Related Macrocycles. Volume 16 , Phthalocyanines : Spectroscopic and Electrochemical Characterization", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 283 pages.
17. "Handbook of Porphyrins and Related Macrocycles. Volume 17 , Phthalocyanines : Properties and Materials", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 285 pages.
18. "Handbook of Porphyrins and Related Macrocycles. Volume 18 , Multiporphyrins, Multiphthalocyanines and Arrays ", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 358 pages.
19. "Handbook of Porphyrins and Related Macrocycles. Volume 19 , Applications of Porphyrins and Phthalocyanines ", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 190 pages.
20. "Handbook of Porphyrins and Related Macrocycles. Volume 20 , Phthalocyanines : Structural Characterization ", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., Academic Press : Burlington, MA, (2003), 190 pages.

HANDBOOK OF PORPHYRIN SCIENCE

21. "Handbook of Porphyrin Science. Volume 1, Supramolecular Chemistry", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 577 pages.
22. "Handbook of Porphyrin Science. Volume 2, Synthesis and Coordination Chemistry", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 386 pages.
23. "Handbook of Porphyrin Science. Volume 3, Synthetic Methodology", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 553 pages.
24. "Handbook of Porphyrin Science. Volume 4, Phototherapy, Radioimmunotherapy and Imaging", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 464 pages.
25. "Handbook of Porphyrin Science. Volume 5, Heme Proteins", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 345 pages.
26. "Handbook of Porphyrin Science. Volume 6, NMR and EPR Techniques", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 466 pages.
27. "Handbook of Porphyrin Science. Volume 7, Physicochemical Characterization", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 510 pages.
28. "Handbook of Porphyrin Science. Volume 8, Open-Chain Oligopyrrole Systems", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 513 pages.
29. "Handbook of Porphyrin Science. Volume 9, Electronic Absorption Spectra-Phthalocyanines", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 650 pages.
30. "Handbook of Porphyrin Science. Volume 10, Catalysis and Bio-Inspired Systems- Part I", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 533 pages.
31. "Handbook of Porphyrin Science. Volume 11, Catalysis and Bio-Inspired Systems- Part II", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 410 pages.
32. "Handbook of Porphyrin Science. Volume 12, Applications", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., (2010), 429 pages.
33. "Handbook of Porphyrin Science. Volume 13, Synthesis and Structural Studies", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 400 pages.
34. "Handbook of Porphyrin Science. Volume 14, Theoretical, Electron Transfer and Physical Studies", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 615 pages.
35. "Handbook of Porphyrin Science. Volume 15, Biochemistry of Tetrapyrroles", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2010), 551 pages.
36. "Handbook of Porphyrin Science. Volume 16, Synthetic Development- Part I", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 416 pages.

37. "Handbook of Porphyrin Science. Volume 17, Synthetic Development- Part II", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 384 pages.
38. "Handbook of Porphyrin Science. Volume 18, Applications and Materials", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 430 pages.
39. "Handbook of Porphyrin Science. Volume 19, Biochemistry of Tetrapyrroles- Part II", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 414 pages.
40. "Handbook of Porphyrin Science. Volume 20, Chlorophylls and Related Systems", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 568 pages.
41. "Handbook of Porphyrin Science. Volume 21, Catalysis", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 419 pages.
42. "Handbook of Porphyrin Science. Volume 22, Biophysical and Physicochemical Studies of Tetrapyrroles", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 315 pages.
43. "Handbook of Porphyrin Science. Volume 23, Synthesis", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 455 pages.
44. "Handbook of Porphyrin Science. Volume 24, Coordination Chemistry and Materials", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 434 pages.
45. "Handbook of Porphyrin Science. Volume 25, Vitamine B12 and Related Systems", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2012), 383 pages.
46. "Handbook of Porphyrin Science. Volume 26, Heme Biochemistry", Gloria C. Ferreira, Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 478 pages.
47. "Handbook of Porphyrin Science. Volume 27, Erythropoiesis, Heme and Applications to Biomedicine", Gloria C. Ferreira, Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 431 pages.
48. "Handbook of Porphyrin Science. Volume 28, Chlorophyll, Photosynthesis and Bio-inspired Energy", Gloria C. Ferreira, Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 327 pages.
49. "Handbook of Porphyrin Science. Volume 29, Porphyrins and Sideroblastic Anemias", Gloria C. Ferreira, Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 496 pages.
50. "Handbook of Porphyrin Science. Volume 30, Heme Proteins- Part II", Gloria C. Ferreira, Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 450 pages.
51. "Handbook of Porphyrin Science. Volume 31, Synthesis- Part II", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 399 pages.
52. "Handbook of Porphyrin Science. Volume 32, Materials", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 437 pages.
53. "Handbook of Porphyrin Science. Volume 33, Applications-Part II", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., (2014), 423 pages.
54. "Handbook of Porphyrin Science. Volume 34, Harnessing Solar Energy", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 328 pages.

55. "Handbook of Porphyrin Science. Volume 35, Cumulative Index for Volumes 1-34", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2014), 399 pages.
56. "Handbook of Porphyrin Science. Volume 36, BODIPYs and Chlorins : Powerful Related Porphyrin Fluorophores", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 311 pages.
57. "Handbook of Porphyrin Science. Volume 37, Synthesis and Reactivity of Exotic Porphyrinoids", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 316 pages.
58. "Handbook of Porphyrin Science. Volume 38, Towards Green Chemistry", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 335 pages.
59. "Handbook of Porphyrin Science. Volume 39, Towards Diagnostics and Treatment of Cancer", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 367 pages.
60. "Handbook of Porphyrin Science. Volume 40, Towards Diagnostics and Treatment of Cancer", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 304 pages.
61. "Handbook of Porphyrin Science. Volume 41, Novel Porphyrinoid Precursors", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 364 pages.
62. "Handbook of Porphyrin Science. Volume 42, Towards Tuned Properties of Porphyrinoids", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 302 pages.
63. "Handbook of Porphyrin Science. Volume 43, Design of Precursors for Sustainable Chemistry", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 315 pages.
64. "Handbook of Porphyrin Science. Volume 44, Bio-Inspired Porphyrin Scaffolds for Synthesis and Catalysis", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2016), 318 pages.
65. "Handbook of Porphyrin Science. Volume 45, Phthalocyanine Synthesis and Computational Design of Functional Tetrapyrroles", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2019), 296 pages.
66. "Handbook of Porphyrin Science. Volume 46, Modern Aspects of Porphyrinoid Chemistry", Karl M. Kadish, Kevin M. Smith and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2022), 356 pages.

SERIES CHEMISTRY, ENERGY AND THE ENVIRONMENT

67. "Chemistry, Energy and the Environment. Volume 1, Perovskite Solar Cells : Principles, Materials and Devices", Eric W-G. Diau, Peter C-Y. Chen, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2018), 234 pages.
68. "Chemistry, Energy and the Environment. Volume 2, Elaboration and Applications of Metal-Organic Frameworks", Shengqian Ma, Jason A. Perman, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2018), 707 pages.
69. "Chemistry, Energy and the Environment. Volume 3, Advanced Green Chemistry. Part I : Greener Organic Reactions and Processes", Istvan T. Horvath, Max Malacria, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2018), 287 pages.

70. "Chemistry, Energy and the Environment. Volume 4, Prospects for Li-ion Batteries and Emerging Energy. Electrochemical Systems", Laure Monconduit, Laurence Croguennec, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2018), 366 pages.
71. "Chemistry, Energy and the Environment. Volume 5, Bioinspired Chemistry. From Enzymes to Synthetic Models", Marius Réglie, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2019), 270 pages.
72. "Chemistry, Energy and the Environment. Volume 6, Advanced Green Chemistry. Part 2: From Catalysis to Chemistry Frontiers", Istvan T. Horvath, Max Malacria, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2019), 416 pages.
73. "Chemistry, Energy and the Environment. Volume 7, Supramolecular Catalysts. Design, Fabrication and Applications" Leyong Wang, Cheng-Yong Su, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2020), 583 pages.
74. "Chemistry, Energy and the Environment. Volume 8, Progress in Layered Double Hydroxides from Synthesis to New Applications", Morena Nocchetti, Umberto Costantino, Karl M. Kadish and Roger Guilard, Eds. World Scientific Publishing Co., Singapore, (2022), 510
75. "Chemistry, Energy and the Environment. Volume 9, Topics in Enantioselective Catalysis. Recent Achievements and Future Challenges", Angela Marinetti, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2022), 482 pages
76. "Chemistry, Energy and the Environment. Volume 10, Electrochemistry of Metalloporphyrins", W Ryan Osterloh, Eric Van Caemelbecke, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2023), 632 pages.
77. "Chemistry, Energy and the Environment. Volume 11, Metal Coordination and Nanomaterials", Armando J L Pombeiro, Kamran T Mahmudov, M Fátima C Guedes da Silva, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2024), 496 pages.
78. "Chemistry, Energy and the Environment. Volume 12, Enzymatic and Organic Systems", Armando J L Pombeiro, Kamran T Mahmudov, M Fátima C Guedes da Silva, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2024), 472 pages.
79. "Chemistry, Energy and the Environment. Volume 13, Metal Complex Catalytic Systems and Materials", Armando J L Pombeiro, Kamran T Mahmudov, M Fátima C Guedes da Silva, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2024), 396 pages.
80. "Chemistry, Energy and the Environment. Volume 14, Biomass and Waste Valorisation, Functional Materials, Energy Conversion and Supercritical Systems", Armando J L Pombeiro, Kamran T Mahmudov, M Fátima C Guedes da Silva, Karl M. Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2024), 736 pages.
81. "Chemistry, Energy and the Environment: Volume 15. Emerging Analytical Techniques for Chemical Speciation Studies. Part 1: Electrochemical and Migration Methods", M Meyer, D Milea, Karl M Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2024), 250 pages.
82. "Chemistry, Energy and the Environment: Volume 16. Emerging Analytical Techniques for Chemical Speciation Studies. Part 2: Spectroscopic Methods", M Meyer, D Milea, Karl M Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2025), 250 pages.
83. "Chemistry, Energy and the Environment: Volume 17. Towards Multiple Applications of Porphyrinoids. The Colored Molecules of Life", Karl M Kadish and Roger Guilard, Eds., World Scientific Publishing Co., Singapore, (2025), 360 pages.

SERIES “FROM BIOMATERIALS TOWARDS MEDICAL DEVICES”

84. “From Biomaterials Towards Medical Devices. Volume 1, Drug Delivery Systems”, Peter Stroeve, Morteza Mahmoudi, Roger Guilard and Karl M. Kadish, Eds., World Scientific Publishing Co., Singapore, (2018), 382 pages.
85. “From Biomaterials Towards Medical Devices. Volume 2, Dental Applications”, Rodrigo Franca, Edward Sacher, Roger Guilard and Karl M. Kadish, Eds., World Scientific Publishing Co., Singapore, (2018), 315 pages.
86. “From Biomaterials Towards Medical Devices. Volume 3, Ligaments Reconstruction”, L’Hocine Yahia, Roger Guilard and Karl M. Kadish, Eds., World Scientific Publishing Co., Singapore, (2021), 384 pages
87. “From Biomaterials Towards Medical Devices. Volume 4, Biomedical Sensors. Fundament and Development”, Huangxian Ju, Juihong Li, Roger Guilard and Karl M. Kadish, Eds., World Scientific Publishing Co., Singapore, 2021, 488 pages.
88. “From Biomaterials Towards Medical Devices. Volume 5, Biomedical Sensors. Nanomaterial – Based Biosensing and Application”, Huangxian Ju, Jinhong Li, Roger Guilard and Karl M. Kadish, Eds., World Scientific Publishing Co., Singapore, 2021, 479 pages.

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

International collaborations

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

International collaborations

Major collaborations:

- **James P. Collman**, University of Stanford (USA)
- **Karl M. Kadish**, University of Houston (USA)
- **Shunichi Fukuzumi**, University of Osaka (Japan)
- **Pierre Harvey**, University of Sherbrooke (Quebec, Canada)

Our cooperation with **Russian collaborators** (Prof. Irina Beletskaya, Lomonosov University, Moscow and **Prof. Aslan Tsivadze**, Frumkin Institute of Physical Chemistry and Electrochemistry, Moscow) led in 2011 to the creation of an International Laboratory (LIA): **Laboratory of Macrocycles Systems and Related Materials** (LAMREM). This creation was based on our scientific partnerships which have already been developed in the framework of several international programs and were supported during three years by the ARCUS Burgundy-Russia project entitled “*Sustainable development: chemical separation and clean processes*”. **The contract of the LIA LAMREM has been renewed for the period 2015-2018.**

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Publications

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Publications (12/2025)

24 reviews

1. Fournari, P.; Guilard, R.; Person, M., Recherches en série hétérocyclique. XII. Synthèses de bromothiophènes substitués. *Bulletin de la Société Chimique de France* **1967**, 4115.
2. Guilard, R.; Fournari, P.; Person, M., Recherches en série hétérocyclique. XIII. Synthèses d'iodothiophènes substitués. *Bulletin de la Société Chimique de France* **1967**, 4121.
3. Person, M.; Guilard, R.; Fournari, P., Comportement polarographique de monohalogénothiophènes substitués. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1967**, 264, 1727.
4. Pigenet, C.; Guilard, R.; Lumbroso, H., Sur les conformations préférentielles des iodoformylthiophènes et de l'iodo-3 diformyl-2,5 thiophène. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1968**, 266, 1399.
5. Lumbroso, H.; Pigenet, C.; Guilard, R., Sur les moments électriques de quelques thiophéno[4,5-c] et thiophéno[4,5-b]tropones. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1970**, 270, 1905.
6. Guilard, R.; Fournari, P., Recherches en série hétérocyclique. XVI. Synthèse et étude des produits de condensation de cétones sur des diformylthiophènes. *Bulletin de la Société Chimique de France* **1971**, 1437.
7. Guilard, R.; Fournari, P., Caractéristiques physicochimiques de cyclohepta [c ou b] thiophénones, de H-cyclohepta [c ou b] thiophènes, de sels de cyclohepta [c ou b] thiophénylium et de métallocènes thiophéniques. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1971**, 273, 160.
8. Dusausoy, Y.; Guilard, R.; Protas, J., Identification et détermination de la structure cristalline du (1-3,3a,8a-h)-(diméthyl-5,7,8 8H-cyclohepta(c)thiophène) chrome tricarbonyle. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1971**, 273, 228.
9. Dusausoy, Y.; Guilard, R.; Protas, J.; Tirouflet, J., Identification et détermination de la structure cristalline du (3a,4-8,8a-h)(triméthyl-5,7,8 8H-cyclohepta(b)thiophène) chrome tricarbonyle. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1971**, 272, 2134.
10. Antoine, B.; Peron, J.-J.; Saumagne, P.; Guilard, R., Infrared spectroscopic study of the effect of solvent and temperature on the $\square(\text{CO})$ portion of 2-formylthiophene and several 5-substituted 2-formylthiophene. *Journal de Chimie Physique* **1971**, 68, 232.
11. Guilard, R.; Tirouflet, J.; Fournari, P., Metallocenes. XXI. Condensation of hexacarbonylchromium on substituted thiophenes and thiophenotropyliene. *Journal of Organometallic Chemistry* **1971**, 33, 195.
12. Guilard, R.; Fournari, P., Recherches en série hétérocyclique. XX. Etude de la condensation de cétones cyclaniques sur des diformylthiophènes. *Bulletin de la Société Chimique de France* **1972**, 4349.
13. Peron, J.-J.; Saumagne, P.; Lebas, J.-M.; Guilard, R., Contribution à l'étude des spectres de vibration des dérivés disubstitués du thiophène en positions 2 et 5, entre 200 et 1700 cm^{-1} . *Journal de Chimie Physique* **1972**, 69, 1575.
14. Dusausoy, Y.; Protas, J.; Guilard, R., Crystal structures and molecular conformations of (3a,4-8,8a-eta)-(4,5,7-triméthyl-4H-cyclohepta[b]thiophene)chromium tricarbonyl and (3a,4-8,8a-eta)-(5,7,8-triméthyl-8H-cyclohepta[b]thiophene)chromium tricarbonyl. *Acta Crystallographica, Section B: Structural Science* **1973**, B29, 477.
15. Dusausoy, Y.; Protas, J.; Guilard, R., Crystal structure and molecular conformation of (1-3,3a,8a-h)(5,7-diméthyl-4H-cyclohepta[c]thiophene)chromium tricarbonyl. *Acta Crystallographica, Section B: Structural Science* **1973**, B29, 726.
16. Nonciaux, J.-C.; Guilard, R.; Laviron, E., Préparation électrochimique de composés cycliques. III. Etude de la réduction chimique et électrochimique de dinitrothiényles. *Bulletin de la Société Chimique de France* **1973**, 3318.
17. El Borai, M.; Guilard, R.; Fournari, P., Synthèse de cyclohepta[c ou b]furannones-6. *Bulletin de la Société Chimique de France* **1974**, 1383.
18. Guilard, R.; Hanquet, B., Action du méthylure de diméthylloxosulfonium sur des cyclohepta[c ou

- b]thiophénones. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1974**, 278, 295.
19. Saumagne, P.; Cozien, Y.; Lauransan, J.; Guillard, R., Evaluation par spectrométrie infrarouge des constantes de complexation de quelques cyclohepta[b ou c]thiophénones-6 avec le *p*-chlorophénol. *Journal de Chimie Physique* **1974**, 71, 93.
 20. Guillard, R.; Dusausoy, Y., Etude de la condensation du fer pentacarbonyle et du fer nonacarbonyle sur le benzo[b]thiophène dioxyde -1,1. *Journal of Organometallic Chemistry* **1974**, 77, 393.
 21. Saumagne, P.; Cozien, Y.; Lauransan, J.; Guillard, R., Etude des spectres de vibration de cyclohepta (b ou c) thiophénones-6 entre 200 et 4000 cm⁻¹. *Canadian Journal of Spectroscopy* **1975**, 20, 115.
 22. Guillard, R.; Fliniaux, B.; Maume, B.; Fournari, P., Sur la synthèse et l'étude de quelques niobioporphyrines. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1975**, 281, 461.
 23. Lecomte, C.; Protas, J.; Guillard, R., Structure cristalline de l'octaéthylporphyrine de titanyle. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1975**, 281, 921.
 24. Guillard, R.; Nonciaux, J.-C.; Laviron, E.; Fournari, P., Synthesis of stable aminothiophenes. *Journal of Heterocyclic Chemistry* **1975**, 191.
 25. Lecomte, C.; Protas, J.; Guillard, R., Structure cristalline de la tri-□-oxo di (□,□,□,□-tetraphénylniobioporphyrine). *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1976**, 283, 397.
 26. Fournari, P.; Guillard, R.; Fontesse, M.; Latour, J.-M.; Marchon, J.-C., Synthèse et propriétés de quelques porphyrines de titanyle. *Journal of Organometallic Chemistry* **1976**, 110, 205.
 27. Guillard, R.; Fontesse, M.; Fournari, P.; Lecomte, C.; Protas, J., The first peroxometalloporphyrin with dioxygen symmetrically bonded by both atoms; Synthesis and X-ray crystal structure of peroxotitaniumoctaethylporphyrin. *Journal of the Chemical Society, Chemical Communications* **1976**, 161.
 28. Lecomte, C.; Protas, J.; Guillard, R.; Fliniaux, B.; Fournari, P., X-ray crystal structure of tetraphenylporphinatoniobium oxide acetate; Demonstration of the presence of seven-coordinated niobium. *Journal of the Chemical Society, Chemical Communications* **1976**, 434.
 29. El Borai, M.; Guillard, R.; Fournari, P.; Dusausoy, Y.; Protas, J., Synthèse de furotropolidènes et étude de leur coordination au chrome tricarbonyle. *Bulletin de la Société Chimique de France* **1977**, 75.
 30. Hanquet, B.; Guillard, R.; Fournari, P., Introduction de ponts carbonés sur des systèmes comportant un cycle troponique orthocondensé à un cycle thiophénique. I. Synthèse et étude structurale des dérivés obtenus au départ de cyclohepta[c]thiophénones-6. *Bulletin de la Société Chimique de France* **1977**, 571.
 31. Guillard, R.; Cocolios, P.; Fournari, P., Novel series of metalloporphyrins. Indium(III) porphyrins with metal-carbon and metal-sulphur bonds. *Journal of Organometallic Chemistry* **1977**, 129, C11.
 32. Hanquet, B.; Guillard, R., Sur les difficultés d'interprétation des spectres de RMN de systèmes arénobishomotropiniques. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1978**, 287, 515.
 33. Ripoll, D.; Cocolios, P.; Guillard, R.; Maume, B., Problems in mass spectrometry for the study of metalloporphyrins. *Finnigan Spectra* **1978**, 1, 7.
 34. Guillard, R.; Latour, J.-M.; Lecomte, C.; Marchon, J.-C.; Protas, J.; Ripoll, D., Peroxotitanium(IV) porphyrins. Synthesis, stereochemistry and properties. *Inorganic Chemistry* **1978**, 17, 1228.
 35. El Borai, M.; Guillard, R.; Fournari, P., Etude de la complexation de systèmes arénotroponiques par le chrome hexacarbonyle. *Journal of Organometallic Chemistry* **1978**, 148, 277.
 36. El Borai, M.; Guillard, R.; Fournari, P.; Dusausoy, Y.; Protas, J., Etude de la complexation de systèmes arénotropolidéniques par le fer pentacarbonyle. *Journal of Organometallic Chemistry* **1978**, 148, 285.
 37. Cocolios, P.; Guillard, R.; Fournari, P., Synthèse et caractéristiques d'indioporphyrines à liaison métal-carbone. *Journal of Organometallic Chemistry* **1979**, 179, 311.
 38. Guillard, R.; Cocolios, P.; Fournari, P.; Lecomte, C.; Protas, J., First sulphinato and sulphonato representatives in the metalloporphyrinic series: alkyl(aryl)sulphinato and -sulphonato indium(III) porphyrins. *Journal of Organometallic Chemistry* **1979**, 168, C49.
 39. Lecomte, C.; Protas, J.; Guillard, R.; Fliniaux, B.; Fournari, P., Synthesis of niobium(V) porphyrinates. Crystal structures of tri-m-oxo-bis[(5,10,15,20-tetraphenylporphyrinato)niobium(V)] and acetato-oxo-(5,10,15,20-tetraphenylporphyrinato)niobium(V)-acetic acid (1/1). *Journal of the Chemical Society, Dalton Transactions* **1979**, 1306.
 40. Boukou-Poba, J. P.; Farnier, M.; Guillard, R., A general method for the synthesis of 2-arylpyrroles. *Tetrahedron Letters* **1979**, 1717.
 41. Lecomte, C.; Protas, J.; Cocolios, P.; Guillard, R., Structure de la méthyl(tétraphénylporphinato)indium(III). *Acta Crystallographica, Section B: Structural Science* **1980**, B36, 2769.
 42. Cozien, Y.; Lauransan, J.; Saumagne, P.; Guillard, R.; El Borai, M., Synthèse et étude des spectres infrarouge de dérivés deutériés de cyclohepta[b ou c]thiophénones-6. *Bulletin de la Société Chimique de*

France 1980, I327.

43. Boreham, C. J.; Latour, J.-M.; Marchon, J.-C.; Boisselier-Cocolios, B.; Guillard, R., Photoinduced deoxygenation of peroxotitanium(IV) porphyrins. *Inorganica Chimica Acta* **1980**, 45, L69.
44. Guillard, R.; Richard, P.; El Borai, M.; Laviron, E., Chemical and electrochemical preparation of low oxidation state niobium porphyrinates. *Journal of the Chemical Society, Chemical Communications* **1980**, 516.
45. Cocolios, P.; Guillard, R.; Fournari, P.; Lecomte, C.; Protas, J.; Boubel, J. C., Synthesis and physicochemical characteristics of alkane (or arene)-thio-, sulphinato-, and sulphonato-indium(III) porphyrins. Crystal structure of methanesulphonato (5,10,15,20-tetraphenylporphyrinato)-indium(III). *Journal of the Chemical Society, Dalton Transactions* **1980**, 2081.
46. Dusausoy, Y.; Hanquet, B.; Guillard, R., Structures d'arénobishomotropones. *Acta Crystallographica, Section B: Structural Science* **1981**, B37, 1367.
47. Boukou Poba, J. P.; Farnier, M.; Guillard, R., Formylation en série arylpyrrolique. *Canadian Journal of Chemistry* **1981**, 59, 2962.
48. Ta Kim, P.; Guillard, R.; Dodey, P.; Sornay, R., Synthèse d'acétyl-6 et benzoyl-6 indoles. *Journal of Heterocyclic Chemistry* **1981**, 18, 1365.
49. Ta Kim, P.; Guillard, R.; Samreth, S.; Sornay, R., Synthèse de dérivés indoliques substitués en 7. *Journal of Heterocyclic Chemistry* **1981s**, 18, 1373.
50. Boisselier-Cocolios, B.; Laviron, E.; Guillard, R., Demountable holder for modified electrodes. *Analytical Chemistry* **1982**, 54, 338.
51. Ta Kim, P.; Guillard, R.; Renaut, P., Synthèse de pyranno[f et g]indoles. *Canadian Journal of Chemistry* **1982**, 60, 2093.
52. Ta Kim, P.; Cocolios, P.; Guillard, R., Synthèse d'oxopyranno[g]indoles. *Canadian Journal of Chemistry* **1982**, 60, 2099.
53. Cocolios, P.; Laviron, E.; Guillard, R., Ferridoporphyrines à liaisons \square métal-carbone: synthèse, caractéristiques et étude de la réaction d'insertion du dioxyde de soufre entre le fer et le groupe alkyl. *Journal of Organometallic Chemistry* **1982**, 228, C39.
54. Cocolios, P.; Moïse, C.; Guillard, R., Liaisons métal-métal en série porphyrinique. Premiers exemples d'indioporphyrines à motifs bi- ou tri-nucléaires. *Journal of Organometallic Chemistry* **1982**, 228, C43.
55. Poncet, J.-L.; Barbe, J.-M.; Guillard, R.; Oumous, H.; Lecomte, C.; Protas, J., Vanadium(II) porphyrin complexes: synthesis and characterization. Crystal structure of 2,3,7,8,12,13,17,18-octaethylporphyrinatobis-(dimethylphenylphosphine)vanadium(II). *Journal of the Chemical Society, Chemical Communications* **1982**, 1421.
56. Lecomte, C.; Protas, J.; Richard, P.; Barbe, J.-M.; Guillard, R., Crystal structure of fluoro(2,3,7,12,13,17,18-octaethylporphyrinato)-oxoniobium; Demonstration of the presence of six-coordinated niobium. *Journal of the Chemical Society, Dalton Transactions* **1982**, 247.
57. Richard, P.; Poncet, J.-L.; Barbe, J.-M.; Guillard, R.; Goulon, J.; Rinaldi, D.; Cartier, A.; Tola, P., Vanadium(IV) porphyrins: synthesis and spectrochemical characterization of dihalogenovanadium(IV) porphyrins. Extended X-ray absorption fine structural study of dibromo(2,3,7,8,12,13,17,18-octaethylporphyrinato)vanadium(IV). *Journal of the Chemical Society, Dalton Transactions* **1982**, 1451.
58. Hanquet, B.; El Borai, M.; Guillard, R.; Dusausoy, Y., Unusual carbon-carbon double bond cleavage in thiophénohomotropone system promoted by ethanedithiol. *Tetrahedron Letters* **1982**, 23, 2859.
59. Goulon, J.; Friant, P.; Poncet, J.-L.; Guillard, R.; Fischer, J.; Ricard, L., Interference and multiple scattering effects in porphyrinic complexes. In *EXAFS and Near Edge Structure*; Bianconi, A.; Incoccia, L.; Stipcich, S., Eds.; Springer: 1983; Vol. 27, pp 100.
60. Goulon, J.; Goulon-Ginet, C.; Friant, P.; Poncet, J. L.; Guillard, R.; Battioni, J. P.; Mansuy, D., EXAFS spectroscopy of selenometalloporphyrins: (A). Comparison of oxo-, thio-, and seleno-vanadium(IV) porphyrins. (B). Study of a selenocarbonyl complex of iron(II) porphyrin. *Fourth International Conference on the Organic Chemistry of Selenium and Tellurium* **1983**, 379.
61. Saoiabi, A.; Ferhat, M.; Barbe, J.-M.; Guillard, R., Metals, including vanadyl and nickel porphyrins, in the oil shales of Timahdit, Morocco. *Fuel* **1983**, 62, 963.
62. Cocolios, P.; Lagrange, G.; Guillard, R., Synthèse et caractérisation par RMN ^1H d'alkyl(aryl)ferriporphyrines à liaison \square métal-carbone. *Journal of Organometallic Chemistry* **1983**, 253, 65.
63. Coutsolelos, A.; Guillard, R., Synthèse et caractéristiques physicochimiques de gallioporphyrines à liaison \square métal-carbone. *Journal of Organometallic Chemistry* **1983**, 253, 273.
64. Richard, P.; Guillard, R., Synthesis and characterization of niobium(IV) porphyrins. Formation and spectroscopic properties of dioxygen adducts of niobium(IV) porphyrins. *Journal of the Chemical Society, Chemical Communications* **1983**, 1454.

65. Poncet, J.-L.; Guillard, R.; Friant, P.; Goulon, J., Vanadium(IV) porphyrins: synthesis and spectrochemical characterization of thiovanadyl porphyrins. EXAFS structural study of thio(2,3,7,8,12,13,17,18-octaethylporphyrinato) vanadium(IV). *Polyhedron* **1983**, *2*, 417.
66. Gleiter, R.; Bischof, P.; Boehm, M. C.; Guillard, R.; Yamaguchi, H., The electronic structure of heterotropones. Photoelectron spectra and MO calculations. *Bulletin of the Chemical Society of Japan* **1984**, *57*, 856.
67. Goulon, J.; Friant, P.; Goulon-Ginet, C.; Coutsolelos, A.; Guillard, R., Bridge-stacked polymeric structure of a fluorinated Ga(III) porphyrin deduced from a perturbed difference fourier analysis of EXAFS spectra. *Chemical Physics* **1984**, *83*, 367.
68. Goulon, J.; Esselin, C.; Friant, P.; Berthé, C.; Muller, J. F.; Poncet, J.-L.; Guillard, R.; Escalier, J. C.; Neff, B. In *Structural characterization by X-ray absorption spectroscopy (EXAFS/XANES) of the vanadium chemical environment in various asphaltenes*, Collection Colloques et Séminaires, Institut Français du Pétrole : Caractérisation des huiles lourdes et résidus pétroliers, Lyon, 1984; Technip: Lyon, 1984; pp 158.
69. Kadish, K. M.; Lançon, D.; Cocolios, P.; Guillard, R., Electrochemical characterization of six-coordinate nitrosyl sigma-bonded iron-phenyl porphyrins. *Inorganic Chemistry* **1984**, *23*, 2372.
70. Ebeid, E.-Z. M.; El Borai, M.; Morsi, S. E.; Guillard, R., Photostability and emission characteristics of In(III) octaethylporphyrin and In(III) tetraphenylporphyrin chloride. *Inorganica Chimica Acta* **1984**, *86*, 71.
71. Lagrange, G.; Cocolios, P.; Guillard, R., Nouveaux complexes nitrosyl d'alkyl(aryl)ferriporphyrines à liaison σ métal-carbone. *Journal of Organometallic Chemistry* **1984**, *260*, C16.
72. Lançon, D.; Cocolios, P.; Guillard, R.; Kadish, K. M., Electrochemistry and spectroelectrochemistry of σ -bonded iron-aryl porphyrins. 1. Evidence for reversible aryl migration from iron to nitrogen of five-coordinate complexes. *Journal of the American Chemical Society* **1984**, *106*, 4472.
73. Cocolios, P.; Chang, D.; Vittori, O.; Guillard, R.; Moise, C.; Kadish, K. M., Electrochemistry of porphyrins containing a metal-metal σ bond. Reduction of (TPP)In(M(CO)₃Cp) complexes where M = Mo and W. *Journal of the American Chemical Society* **1984**, *106*, 5724.
74. Cocolios, P.; Lagrange, G.; Guillard, R.; Oumous, H.; Lecomte, C., Alkane (or arene) sulphinato- and sulphonato-iron(III) porphyrins: synthesis and physicochemical properties. Crystal structure of benzenesulphinato(5,10,15,20-tetraphenylporphyrinato)-iron(III). *Journal of the Chemical Society, Dalton Transactions* **1984**, 567.
75. Goulon, J.; Retournard, A.; Friant, P.; Goulon-Ginet, C.; Berthé, C.; Muller, J.-F.; Poncet, J.-L.; Guillard, R.; Escalier, J.-C.; Neff, B., Structural characterization by X-ray absorption spectroscopy (EXAFS/XANES) of the vanadium chemical environment in Boscan asphaltenes. *Journal of the Chemical Society, Dalton Transactions* **1984**, 1095.
76. Oumous, H.; Lecomte, C.; Protas, J.; Poncet, J.-L.; Barbe, J.-M.; Guillard, R., Vanadium(II) porphyrins: synthesis and physicochemical properties. Crystal structures of bis(dimethylphenylphosphine)- and bis(tetrahydrofuran)-(2,3,7,8,12,13,17,18-octaethyl-porphyrinato)vanadium(II). *Journal of the Chemical Society, Dalton Transactions* **1984**, 2677.
77. Poncet, J.-L.; Guillard, R.; Friant, P.; Goulon-Ginet, C.; Goulon, J., Porphyrines du vanadium(IV): synthèse et caractérisation des porphyrines de thio et sélénovanadyde. Etudes spectroscopiques EXAFS et RPE. *Nouveau Journal de Chimie* **1984**, *8*, 583.
78. Lançon, D.; Cocolios, P.; Guillard, R.; Kadish, K. M., Electrochemistry and spectroelectrochemistry of σ -bonded iron-aryl porphyrins. 2. Investigations of six coordinate complexes. *Organometallics* **1984**, *3*, 1164.
79. Dormond, A.; Belkalem, B.; Guillard, R., Unusual metalloporphyrins: thorium and uranium complexes of octaethylporphyrin. *Polyhedron* **1984**, *3*, 107.
80. Oumous, H.; Lecomte, C.; Protas, J.; Cocolios, P.; Guillard, R., Pentacoordinate iron(III) porphyrin carboxylates: synthesis, physicochemical characteristics and X-ray crystal structure of acetato(5,10,15,20-tetraparatolyl-porphyrinato) iron(III). *Polyhedron* **1984**, *3*, 651.
81. Barbe, J.-M.; Guillard, R.; Lecomte, C.; Gerardin, R., Reactions of Collman complex with tin(IV) and germanium(IV) porphyrins. Formation of [tin(II) and germanium(II) porphyrins] tetracarbonyliron and crystal structure of [2,3,7,8,12,13,17,18-octaethylporphinato tin(II)] tetracarbonyliron. *Polyhedron* **1984**, *3*, 889.
82. Goulon, J.; Tola, P.; Brochon, J. C.; Lemonnier, M.; Dexpert-Ghys, J.; Guillard, R., X-ray excited optical luminescence (XEOL): potentiality and limitations for the detection of XANES/EXAFS excitation spectra. In *Springer Proceedings in Physics* ; 1984; Vol. 2, pp 490.
83. Caille, J.-C.; Bellamy, F.; Guillard, R., Sur une voie alternative de synthèse de la loganine. *Tetrahedron Letters* **1984**, *25*, 2345.
84. Caille, J.-C.; Guillard, R., Sur une méthode de synthèse d'une d-lactone cyclopenténique via l'alkylation

- régiosélective d'hydrazones α,α -insaturées. *Tetrahedron Letters* **1984**, 25, 2771.
85. Hanquet, B.; Farnier, M.; Guillard, R.; Lecomte, C.; Dusausoy, Y., Réarrangement de thiophénobishomotropones en naphtho[1,8-bc]thiophène et benzo[2,3-b]thiophène; Etudes spectroscopique et mécanistique. *Canadian Journal of Chemistry* **1985**, 63, 2089.
 86. Guillard, R.; Lecomte, C., Recent developments in the studies of titanium and vanadium porphyrins with a special emphasis on oxygen adducts, low valent metalloporphyrins, and related systems with sulfur and selenium. *Coordination Chemistry Reviews* **1985**, 65, 87.
 87. Cocolios, P.; Guillard, R.; Bayeul, D.; Lecomte, C., Carbon dioxide insertion into the methyl-indium σ bond of methylindium(III) porphyrins. Molecular stereochemistry of (acetato)(2,3,7,8,12,13,17,18-octaethyl-porphyrinato) indium(III). *Inorganic Chemistry* **1985**, 24, 2058.
 88. Kadish, K. M.; Boisselier-Cocolios, B.; Cocolios, P.; Guillard, R., Electrochemistry and spectroelectrochemistry of indium(III) porphyrins. Reactions of five-coordinate σ -bonded complexes. *Inorganic Chemistry* **1985**, 24, 2139.
 89. Guillard, R.; Boisselier-Cocolios, B.; Tabard, A.; Cocolios, P.; Simonet, B.; Kadish, K. M., Electrochemistry and spectroelectrochemistry of σ -bonded aryliron porphyrins. 3. Synthesis and characterization of high, low, and variable spin state five-coordinate σ -bonded aryl- and perfluoroaryliron(III) complexes. *Inorganic Chemistry* **1985**, 24, 2509.
 90. Kadish, K. M.; Cornillon, J.-L.; Cocolios, P.; Tabard, A.; Guillard, R., Electrochemistry and spectroelectrochemistry of indium(III) porphyrins. Reactions of five-coordinate ionic complexes. *Inorganic Chemistry* **1985**, 24, 3645.
 91. Guillard, R.; Lagrange, G.; Tabard, A.; Lançon, D.; Kadish, K. M., Reactions of σ -bonded alkyl- and aryliron porphyrins with nitric oxide. Synthesis and electrochemical characterization of six-coordinate nitrosyl σ -bonded alkyl- and aryliron porphyrins. *Inorganic Chemistry* **1985**, 24, 3649.
 92. Kadish, K. M.; Boisselier-Cocolios, B.; Coutsolelos, A.; Mitaine, P.; Guillard, R., Electrochemistry and spectroelectrochemistry of gallium(III) porphyrins. Redox properties of five-coordinate ionic and σ -bonded complexes. *Inorganic Chemistry* **1985**, 24, 4521.
 93. Hanquet, B.; Guillard, R.; Dusausoy, Y., Cyclopropacycloheptathiophenones and thiols: unexpected rearrangement with dithiols leading to benzo- and cyclooctathiophenes. Spectroscopic and mechanistic studies. *Journal of the Chemical Society, Perkin Transactions I* **1985**, 983.
 94. Richard, P.; Guillard, R., Synthèse et études physicochimiques de complexes porphyriniques du niobium(IV). *Nouveau Journal de Chimie* **1985**, 2, 119.
 95. Caille, J.-C.; Tabyaoui, B.; Guillard, R.; Bellamy, F., An expedient and stereoselective synthesis of (\pm)-boschnialactone. *Synthetic Communications* **1985**, 15, 669.
 96. Caille, J.-C.; Farnier, M.; Guillard, R., Substitution régiosélective d'arènesulfonylhydrazones α,α -insaturées via la réaction de Shapiro. *Canadian Journal of Chemistry* **1986**, 64, 824.
 97. Caille, J.-C.; Farnier, M.; Guillard, R.; Aubry, A.; Lecomte, C., Sur une nouvelle méthode de synthèse de α -lactones cyclopenténiques. *Canadian Journal of Chemistry* **1986**, 64, 831.
 98. Hanquet, B.; Guillard, R., Synthèses, réactivité et études structurales en série thiophéno[b]homo-troponique. *Canadian Journal of Chemistry* **1986**, 64, 1360.
 99. Kadish, K. M.; Boisselier-Cocolios, B.; Swistak, C.; Barbe, J.-M.; Guillard, R., Electrochemistry of porphyrins containing a metal-metal bond. Reactions of "carbenoid" (TpTP)GeFe(CO)₄ and (TpTP)SnFe(CO)₄. *Inorganic Chemistry* **1986**, 25, 121.
 100. Kadish, K. M.; Anderson, J. E.; Yao, C. L.; Guillard, R., Electrochemical and spectroelectrochemical studies of (tetraphenylporphyrinato)rhodium(III) acetyl, (TPP)Rh(COCH₃). *Inorganic Chemistry* **1986**, 25, 1277.
 101. Anderson, J. E.; Liu, Y. H.; Guillard, R.; Barbe, J.-M.; Kadish, K. M., Electrochemical studies of dimeric niobium(V) porphyrins. Reactions of [(OEP)Nb₂]O₃ and [(TpTP)Nb₂]O₃ in nonaqueous media. *Inorganic Chemistry* **1986**, 25, 2250.
 102. Anderson, J. E.; Liu, Y. H.; Guillard, R.; Barbe, J.-M.; Kadish, K. M., Electrochemical studies of monomeric niobium(V) and niobium(IV) porphyrins in nonaqueous media. *Inorganic Chemistry* **1986**, 25, 3786.
 103. Tabard, A.; Guillard, R.; Kadish, K. M., Synthesis, characterization, and electrochemistry of indium(III) porphyrins that contain a stable indium-carbon σ bond. *Inorganic Chemistry* **1986**, 25, 4277.
 104. Kadish, K. M.; Swistak, C.; Boisselier-Cocolios, B.; Barbe, J.-M.; Guillard, R., Reactions of metalloporphyrins possessing metal-metal bonds. Synthesis and electrochemical studies of (P)Sn^{II}Fe(CO)₄ and (P)Ge^{II}Fe(CO)₄, where P = octaethylporphyrin or tetraarylporphyrin. *Inorganic Chemistry* **1986**, 25, 4336.
 105. Dormond, A.; Belkalem, B.; Charpin, P.; Lance, M.; Vigner, D.; Folcher, G.; Guillard, R., Thorium and uranium porphyrins. Synthesis and crystal structure of bis(acetylacetonato)(2,3,7,8,12,13,17,18-

- octaethylporphyrinato)thorium(IV). *Inorganic Chemistry* **1986**, 25, 4785.
106. Loos, M.; Goulon, J.; Barbe, J.-M.; Guillard, R., Structural characterization of bimetallic porphyrin complexes using difference EXAFS spectroscopy. *Journal de Physique* **1986**, 47(C8), 633.
 107. Ruiz-Lopez, M. F.; Rinaldi, D.; Esselin, C.; Goulon, J.; Poncet, J.-L.; Guillard, R., Relative energy diagram of the lowest unoccupied molecular orbitals of oxo-, thio-, and seleno-vanadium(IV) porphyrins, as inferred from combined XANES and E.S.R. data. *Journal de Physique* **1986**, 47 (C8), 637.
 108. Loos, M.; Friant, P.; Ascone, I.; Goulon, J.; Barbe, J.-M.; Coutsolelos, A.; Guillard, R., Stacked or bridge stacked polymeric structures of metalloporphyrins and phthalocyanines investigated by difference EXAFS spectroscopy. *Journal de Physique* **1986**, 47(C8), 641.
 109. Farnier, M.; Brost, M.; Hanquet, B.; Guillard, R., Etude de la décomposition thermique d'azido dithiényl-1,2 éthènes et éthanes. *Journal of Heterocyclic Chemistry* **1986**, 23, 513.
 110. Farnier, M.; Brost, M.; Hanquet, B.; Guillard, R., Synthèse d'azido dithiényl-1,2 éthènes et éthanes. *Journal of Heterocyclic Chemistry* **1986**, 23, 517.
 111. Boukhris, A.; Lecomte, C.; Coutsolelos, A.; Guillard, R., Alkylsulfonato(porphyrinato)gallium(III). Détermination de la structure cristalline de la méthylsulfonato(octaéthyl-2,3,7,8,12,13,17,18-porphyrinato)-gallium(III). *Journal of Organometallic Chemistry* **1986**, 303, 151.
 112. Tabard, A.; Lagrange, G.; Guillard, R.; Jouan, M.; Dao, N. Q., Etude par spectroscopie Raman de résonance du schéma de coordination du fer de dérivés ferriporphyriniques à liaison \square métal-carbone. *Journal of Organometallic Chemistry* **1986**, 308, 335.
 113. Coutsolelos, A.; Guillard, R.; Boukhris, A.; Lecomte, C., Synthesis and characterisation of azido- and thiocyanato-gallium(III) porphyrins. Crystal structure of azido(2,3,7,8,12,13,17,18-octaethylporphyrinato)gallium(III). *Journal of the Chemical Society, Dalton Transactions* **1986**, 1779.
 114. Coutsolelos, A.; Guillard, R.; Bayeul, D.; Lecomte, C., Gallium(III) porphyrins: synthesis and physicochemical characteristics of halogeno gallium(III) porphyrins. X-ray crystal structure of chloro-(5,10,15,20-tetraphenyl-porphyrinato)gallium(III). *Polyhedron* **1986**, 5, 1157.
 115. Reeb, P.; Mugnier, Y.; Guillard, R.; Laviron, E., Electrogeneration of low-valent-oxidation-state vanadium porphyrins. Characterization of the first vanadium(III) species. *Inorganic Chemistry* **1987**, 26, 209.
 116. Guillard, R.; Dormond, A.; Belkalem, M.; Anderson, J. E.; Liu, Y. H.; Kadish, K. M., First example of 1:1 actinide-phthalocyanine complexes: synthesis, electrochemical, and spectral characterization of bis(diketonato)thorium(IV) and -uranium(IV) phthalocyaninates. *Inorganic Chemistry* **1987**, 26, 1410.
 117. Kadish, K. M.; Tabard, A.; Zrineh, A.; Ferhat, M.; Guillard, R., Synthesis, electrochemistry, and spectroelectrochemistry of thallium(III) porphyrins. Redox properties of five-coordinate ionic and \square -bonded complexes. *Inorganic Chemistry* **1987**, 26, 2459.
 118. Guillard, R.; Mitaine, P.; Moïse, C.; Lecomte, C.; Boukhris, A.; Swistak, C.; Tabard, A.; Lacombe, D.; Cornillon, J.-L.; Kadish, K. M., Metalloporphyrins with metal-metal bonds. Synthesis and characterization of (P)InMn(CO)₅, (P)InCo(CO)₄, and (P)InM(CO)₃Cp where M = Cr, Mo and W. Molecular stereochemistry of [(2,3,7,8,12,13,17,18-octaethylporphyrinato)indium(III)]pentacarbo-nylmanganese. *Inorganic Chemistry* **1987**, 26, 2467.
 119. Kadish, K. M.; Cornillon, J.-L.; Coutsolelos, A.; Guillard, R., Synthesis, electrochemistry, and ligand-addition reactions of gallium(III) porphyrins. *Inorganic Chemistry* **1987**, 26, 4167.
 120. Guillard, R.; Gerges, S. S.; Tabard, A.; Richard, P.; El-Borai, M. A.; Lecomte, C., First example of organic reaction implying the axial ligand in metalloporphyrin series. Synthesis, characterization of 4-substituted (tetrazolato)indium(III) porphyrin complexes, and molecular structure of (4-phenyltetrazolato)(2,3,7,8,12,13,17,18-octaethylporphyrinato) indium(III). *Journal of the American Chemical Society* **1987**, 109, 7228.
 121. Kadish, K. M.; Xu, Q. Y.; Barbe, J.-M.; Anderson, J. E.; Wang, E.; Guillard, R., Synthesis, photochemistry, and electrochemistry of (P)GeR₂ and (P)Ge(R)X (P = TPP or OEP, R = CH₃, CH₂C₆H₅, or C₆H₅, and X = Cl⁻, OH⁻ or ClO₄⁻). *Journal of the American Chemical Society* **1987**, 109, 7705.
 122. Guillard, R.; Lecomte, C.; Kadish, K. M., Synthesis, electrochemistry and structural properties of porphyrins with metal-carbon single bonds and metal-metal bonds. *Structure and Bonding* **1987**, 64, (Metal Complexes Tetrapyrrole Ligands 1), 205.
 123. Aubert, T.; Farnier, M.; Hanquet, B.; Guillard, R., A new versatile synthesis of isoquinolines by condensation of iminophosphoranes with *o*-phthaldehyde. *Synthetic Communications* **1987**, 15, 1831.
 124. Guillard, R.; Kadish, K. M., Some aspects of organometallic chemistry in metalloporphyrin chemistry: synthesis, chemical reactivity, and electrochemical behavior of porphyrins with metal-carbon bonds. *Chemical Reviews* **1988**, 88, 1121.
 125. Guillard, R.; Kadish, K. M., Metal-metal bonds in metalloporphyrins. *Comments in Inorganic Chemistry*

1988, 7, 287.

126. Tabard, A.; Cocolios, P.; Lagrange, G.; Gerardin, R.; Hubsch, J.; Lecomte, C.; Zarembowitch, J.; Guillard, R., Characteristic properties of high- and low-spin-state five coordinate s-bonded aryl-, alkyl-, and perfluoroaryliron(III) porphyrins: ^1H NMR, ESR, Mössbauer, and magnetic studies. *Inorganic Chemistry* **1988**, 27, 110.
127. Kadish, K. M.; Sazou, D.; Liu, Y. M.; Saoiabi, A.; Ferhat, M.; Guillard, R., Electrochemical and spectral characterization of the monomer-dimer equilibrium involving (meso-tetrakis(1-methylpyridinium-4-yl) porphinato)nickel(II) in dimethylformamide. *Inorganic Chemistry* **1988**, 27, 686.
128. Kadish, K. M.; Xu, Q. Y.; Barbe, J.-M.; Anderson, J. E.; Wang, E.; Guillard, R., Electrochemistry of germanium porphyrins in nonaqueous media. Reactions of water and hydroxide ligands associated with (P)Ge(ClO₄)₂ and (P)Ge(OH)₂, where P is the dianion of tetraphenylporphyrin (TPP) or octaethylporphyrin (OEP). *Inorganic Chemistry* **1988**, 27, 691.
129. Guillard, R.; Zrineh, A.; Ferhat, M.; Tabard, A.; Mitaine, P.; Swistak, C.; Richard, P.; Lecomte, C.; Kadish, K. M., Metalloporphyrins with metal-metal bonds. Synthesis, characterization, and electrochemistry of (P)TiMn(CO)₅, (P)TiCo(CO)₄, and (P)TiM(CO)₃Cp where M = Cr, Mo and W. Crystal structure of [(2,3,7,8,12,13,17,18-octaethylporphinato)thallium(III)]pentacarbonyl manganese. *Inorganic Chemistry* **1988**, 27, 697.
130. Kadish, K. M.; Xu, Q. Y.; Barbe, J.-M.; Guillard, R., Synthesis and reactivity of s-bonded silicon metalloporphyrins. Spectroscopic characterization and electrochemistry of (P)Si(R)₂, (P)Si(R)X and (P)SiX₂, where R = C₆H₅ or CH₃ and X = OH⁻ or ClO₄⁻. *Inorganic Chemistry* **1988**, 27, 1191.
131. Kadish, K. M.; Sazou, D.; Liu, Y. M.; Saoiabi, A.; Ferhat, M.; Guillard, R., Electrochemical and spectroelectrochemical studies of nickel(II) porphyrins in dimethylformamide. *Inorganic Chemistry* **1988**, 27, 1198.
132. Kadish, K. M.; Sazou, D.; Araullo, C.; Liu, Y. M.; Saoiabi, A.; Ferhat, M.; Guillard, R., Electrochemistry of vanadyl porphyrins in dimethylformamide. *Inorganic Chemistry* **1988**, 27, 2313.
133. Benachenou, F.; Mesli, M. A.; El-Borai, M.; Hanquet, B.; Guillard, R., Synthesis and structure elucidation of the condensation products between thiophene dicarbonyl aldehydes and aromatic amines. Potential analgesic and anti-inflammatory agents. *Journal of Heterocyclic Chemistry* **1988**, 25, 1531.
134. Kadish, K. M.; Liu, Y. H.; Anderson, J. E.; Charpin, P.; Chevrier, G.; Lance, M.; Nierlich, M.; Vigner, D.; Dormond, A.; Belkalem, B.; Guillard, R., First example of a trimeric metalloporphyrin. Synthesis, electrochemical, and spectroelectrochemical studies of [(P)Th(OH)₂]₃ where P is the dianion of octaethyl- or tetraphenylporphyrin. Crystal structure of a dihydrated trinuclear complex of dihydroxy(5,10,15,20-tetraphenylporphinato) thorium(IV) heptane solvate. *Journal of the American Chemical Society* **1988**, 110, 6455.
135. Guillard, R.; Barbe, J.-M.; Boukhris, A.; Lecomte, C.; Anderson, J. E.; Xu, Q. Y.; Kadish, K. M., Synthesis and electrode reactions of difluorogermanium(IV) porphyrins. Molecular stereochemistry and crystal structure of difluoro(2,3,7,8,12,13,17,18-octaethylporphyrinato)germanium(IV). *Journal of the Chemical Society, Dalton Transactions* **1988**, 1109.
136. Guillard, R.; Barbe, J.-M.; Boukhris, M.; Lecomte, C., Synthesis and characterization of diazido-germanium(IV) and -tin(IV) porphyrins. Crystal structure of diazido(5,10,15,20-tetra-*p*-tolylporphyrinato)germanium(IV). *Journal of the Chemical Society, Dalton Transactions* **1988**, 1921.
137. Jagerovic, N.; Barbe, J.-M.; Farnier, M.; Guillard, R., Synthesis and characterization of bis(phenyltetrazolato)-germanium(IV) and -tin(IV) porphyrins. *Journal of the Chemical Society, Dalton Transactions* **1988**, 2569.
138. Guillard, R.; Mitaine, P.; Moïse, C.; Cocolios, P.; Kadish, K. M., Metalloporphyrins possessing metal-metal bonds. Synthesis, characterization, and electrochemistry of [(P)In]₂Fe(CO)₄ where P is the dianion of octaethylporphyrin or tetraphenylporphyrin. *New Journal of Chemistry* **1988**, 12, 699.
139. Lecomte, C.; Bayeul, D.; Senglet, N.; Guillard, R., Crystal structure of copper(II) 2-thenoyltrifluoroacetate. *Polyhedron* **1988**, 7, 303.
140. Ebeid, E. M.; Habib, A. M.; Abdel-Kader, M. H.; Yousef, A. B.; Guillard, R., Spectroscopic and stability characteristics of Ga- tetraphenylporphyrin- and Ge- and Sn- tetra(*p*-methyl-phenyl)porphyrin chlorides. *Spectrochimica Acta, Part A: Molecular and Biomolecular Spectroscopy* **1988**, 44, 127.
141. Aubert, T.; Tabyaoui, B.; Farnier, M.; Guillard, R., A one-pot synthesis of 2-substituted 2,4,5,6-tetrahydrocyclopentapyrazoles. *Synthesis* **1988**, 742.
142. Tabyaoui, B.; Aubert, T.; Farnier, M.; Guillard, R., Synthesis and thermolysis of cycloalkenyl azides and iminophosphorane aldehydes. A new pathway to bisannelated pyridines. *Synthetic Communications* **1988**, 18, 1475.
143. Richard, P.; Zrineh, A.; Guillard, R.; Habbou, A.; Lecomte, C., Crystal structure of tricarbonyl(eta-

- cyclopentadienyl)[(2,3,7,8,12,13,17,18-octaethylporphinato)thallio(III)]molybdenum(0). *Acta Crystallographica, Section C: Crystal Structure Communications* **1989**, C45, 1224.
144. Lecomte, C.; Habbou, A.; Mitaine, P.; Richard, P.; Guillard, R., Structure of tricarbonyl(eta-cyclopentadienyl)[(2,3,7,8,12,13,17,18-octaethyl porphinato)indio(III)]molybdenum(0) at 100(5) K. *Acta Crystallographica, Section C: Crystal Structure Communications* **1989**, 45, 1226.
 145. Kadish, K. M.; Araullo, C.; Maiya, G. B.; Sazou, D.; Barbe, J.-M.; Guillard, R., Electrochemical and spectral characterization of copper, zinc, and vanadyl meso-tetrakis(1-methylpyridinium-4-yl)porphyrin complexes in dimethylformamide. *Inorganic Chemistry* **1989**, 28, 2528.
 146. Kadish, k. M.; Sazou, D.; Maiya, G. B.; Han, B. C.; Liu, Y. H.; Saoiabi, A.; Ferhat, M.; Guillard, R., Electrochemistry of nickel "picket fence" porphyrin. Electrogeneration and spectral characterization of nickel complexes in unusual oxidation states. *Inorganic Chemistry* **1989**, 28, 2542.
 147. Kadish, K. M.; Maiya, G. B.; Araullo, C.; Guillard, R., Micellar effects on the aggregation of tetraanionic porphyrins. Spectroscopic characterization of free-base meso-tetrakis-(4-sulfonatophenyl)porphyrin, (TPPS)H₂ and (TPPS)M (M = Zn(II), Cu(II) and VO²⁺) in aqueous micellar media. *Inorganic Chemistry* **1989**, 28, 2725.
 148. Guillard, R.; Barbe, J.-M.; Sanchez, J. P.; Dao, N. Q., Spectroscopic characterization of iodine doped fluorogallium(III) porphyrins. Determination of the nature of the counterion by Raman and ¹²⁹I Mössbauer spectroscopies. *Inorganica Chimica Acta* **1989**, 164, 39.
 149. Kadish, K. M.; Liu, Y. H.; Anderson, J. E.; Dormond, A.; Belkalem, M.; Guillard, R., Electrochemical and spectroelectrochemical studies of bis(diketonate) thorium(IV) and uranium(IV) porphyrins. *Inorganica Chimica Acta* **1989**, 163, 201.
 150. Kadish, K. M.; Cornillon, J.-L.; Korp, J. D.; Guillard, R., The X-ray crystal and molecular structure of chloro-□,□,□,□-tetraphenylporphinatopyridinegallium(III). *Journal of Heterocyclic Chemistry* **1989**, 26, 1101.
 151. Guillard, R.; Barbe, J.-M.; Richard, P.; Petit, P.; André, J. J.; Lecomte, C.; Kadish, K. M., Electrocrystallisation and X-ray structure of partially oxidized stacked porphyrin trimers of the form [(OEP)Ga]₃F₂(BF₄)₂.C₇H₈. *Journal of the American Chemical Society* **1989**, 111, 4684.
 152. Ratti, C.; Richard, P.; Tabard, A.; Guillard, R., Synthesis and characterization of a new series of titanium(IV) porphyrins coordinated to a disulphur or a diselenium ligand. *Journal of the Chemical Society, Chemical Communications* **1989**, 69.
 153. Kadish, K. M.; Xu, Q. Y.; Maiya, G. B.; Barbe, J.-M.; Guillard, R., Effect of axially bound anions on the electroreduction of tin(IV) porphyrins in tetrahydrofuran. *Journal of the Chemical Society, Dalton Transactions* **1989**, 1531.
 154. Aubert, T.; Tabyaoui, B.; Farnier, M.; Guillard, R., New cyclopenta[b]pyrrole and -pyridines by reaction of 2-azido and 2-phosphoranylidenaminocyclopent-1-ene-1-carbaldehydes with aliphatic esters. *Journal of the Chemical Society, Perkin Transactions I* **1989**, 1369.
 155. Aubert, T.; Farnier, M.; Meunier, I.; Guillard, R., Synthesis of dipyrzolo[3,4-b:4',3'-f]azepines and dithieno[2,3-b:3',2'-f]azepines from 1-substituted 2,7-dichloro-4,5-dihydro-1H-azepine-3,6-dicarbaldehydes. *Journal of the Chemical Society, Perkin Transactions I* **1989**, 2095.
 156. Loos, M.; Ascone, I.; Friant, P.; Goulon, J.; Senglet, N.; Barbe, J.-M.; Guillard, R.; Faure, D., Modelisation of the interactions of vanadyl porphyrins with hydroprocessing catalysts. *Physica B* **1989**, 158, 191.
 157. Loos, M.; Friant, P.; Barbe, J.-M.; Guillard, R., XAS studies of some molecular conductors: partially oxidized nickel phthalocyanines. *Physica B* **1989**, 158, 231.
 158. Hanquet, B.; Tabyaoui, B.; Caille, J.-C.; Farnier, M.; Guillard, R., Synthèse stéréosélective de (±)-boschnialactone, (±) 7-épitéucriumlactone et (±)7-épiisoiridomyrmécine. Etude de la stéréochimie par spectroscopie de Résonance Magnétique Nucléaire. *Canadian Journal of Chemistry* **1990**, 68, 620.
 159. Aubert, T.; Farnier, M.; Guillard, R., Nouvelle voie de synthèse d'isoindolones et d'isoquinoléines par condensation d'imino-phosphoranes avec l'ortho-phthalaldéhyde : réactions, mécanismes et étude structurale. *Canadian Journal of Chemistry* **1990**, 68, 842.
 160. Loos, M.; Ascone, I.; Friant, P.; Ruiz-Lopez, M. F.; Goulon, J.; Barbe, J.-M.; Senglet, N.; Guillard, R.; Faure, D.; Des Courières, T., Vanadyl porphyrins: evidence for self-association and for specific interactions with hydroprocessing catalysts shown from X.A.F.S. and E.S.R. studies. *Catalysis Today* **1990**, 7, 497.
 161. Gauthier, C.; Ascone, I.; Goulon, J.; Cortes, R.; Barbe, J.-M.; Guillard, R., First experimental evidence of circularly polarized X-ray excited optical luminescence (XEOL) from chiral Eu³⁺ complexes. *Chemical Physics* **1990**, 147, 165.
 162. Senglet, N.; Williams, C.; Faure, D.; Des Courières, T.; Guillard, R., Microheterogeneity study of heavy crude petroleum by UV-visible spectroscopy and small angle X-ray scattering. *Fuel* **1990**, 69, 72.

163. Senglet, N.; Faure, D.; Des Courières, T.; Bernasconi, C.; Guillard, R., ESR characterization of phenalenyl radicals in various fuel samples. *Fuel* **1990**, 69, 203.
164. Guillard, R.; Ratti, C.; Tabard, A.; Richard, P.; Dubois, D.; Kadish, K. M., Disulfur and diselenium titanium(IV) porphyrins : synthesis and characterization of (P)Ti(\square^2 -S₂) and (P)Ti(\square^2 -Se₂), where P is one of several different porphyrin rings. Crystal structure of (5,10,15,20-tetra-*p*-tolylporphinato)perthiotitanium(IV). *Inorganic Chemistry* **1990**, 29, 2532.
165. Barbe, J.-M.; Ratti, C.; Richard, P.; Lecomte, C.; Gerardin, R.; Guillard, R., Tin(II) porphyrins : synthesis and spectroscopic properties of a series of divalent tin porphyrins. X-ray crystal structure of (2,3,7,8,12,13,17,18-octaethylporphinato)tin (II). *Inorganic Chemistry* **1990**, 29, 4126.
166. Guillard, R.; Zrineh, A.; Tabard, A.; Endo, A.; Han, B. C.; Lecomte, C.; Souhassou, M.; Habbou, A.; Ferhat, M.; Kadish, K. M., Synthesis and spectroscopic and electrochemical characterization of ionic and s-bonded aluminum(III) porphyrins. Crystal structure of methyl(2,3,7,8,12,13,17,18-octaethylporphinato)aluminum(III), (OEP)Al(CH₃). *Inorganic Chemistry* **1990**, 29, 4476.
167. Guillard, R.; Tabard, A.; Zrineh, A.; Ferhat, M., Physicochemical study of s-bonded heteronuclear metalloporphyrin complexes of the type (P)InM(L) and (P)TiM(L) where M(L) = Mn(CO)₅, Co(CO)₄, Cr(CO)₃Cp, Mo(CO)₃Cp, or W(CO)₃Cp. *Journal of Organometallic Chemistry* **1990**, 389, 315.
168. Collman, J. P.; Hutchinson, J. E.; Wagenknecht, P. S.; Lewis, N. S.; Lopez, M. A.; Guillard, R., Unprecedented, bridged dihydrogen complex of a cofacial metallodiporphyrin and its relevance to the bimolecular reductive elimination of hydrogen. *Journal of the American Chemical Society* **1990**, 112, 8206.
169. Aubert, T.; Farnier, M.; Guillard, R., Condensation of iminophosphoranes with dicarbonyl dihalides: a one-step synthesis of new azepine derivatives. *Synthesis* **1990**, 149.
170. Richard, P.; Lopez, M. A.; Guillard, R.; Lecomte, C.; Hutchison, J.; Collman, J. P. In *Crystal structure of a heterodinuclear cofacial bisporphyrin*, XVth Congress of International Union of Crystallography, Bordeaux, France, 1990; Authier, A., Ed. Bordeaux, France, 1990; pp C215.
171. Kadish, K. M.; Liu, Y. H.; Sazou, D.; Senglet, N.; Guillard, R., Structural effects on metalloporphyrin redox potentials. Electroreduction of mono-*N*-hexadecylpyridiniumporphyrins in non-aqueous media. *Analytica Chimica Acta* **1991**, 251, 47.
172. Guillard, R.; Jagerovic, N.; Tabard, A.; Richard, P.; Courthaudon, L.; Louati, A.; Lecomte, C.; Kadish, K. M., Metalloporphyrins containing sigma-bonded nitrogen axial ligands. 1. Synthesis and characterization of indium(III) porphyrin complexes. Molecular structures of (4-phenyltetrazolato)- and (5-methyltetrazolato)(2,3,7,8,12,13,17,18-octaethylporphinato)indium(III). *Inorganic Chemistry* **1991**, 30, 16.
173. Guillard, R.; Perrot, I.; Tabard, A.; Richard, P.; Lecomte, C.; Liu, Y. H.; Kadish, K. M., Metalloporphyrins containing \square -bonded nitrogen axial ligands. 2. Synthesis and characterization of iron(III) tetrazolato and triazolato porphyrin complexes. Molecular structures of (5-methyltetrazolato)(2,3,7,8,12,13,17,18-octaethylporphinato)iron(III). *Inorganic Chemistry* **1991**, 30, 27.
174. Guillard, R.; Ratti, C.; Barbe, J.-M.; Dubois, D.; Kadish, K. M., Synthesis and characterization of tin(IV) porphyrins with S²⁻ and Se²⁻ axial ligands. *Inorganic Chemistry* **1991**, 30, 1537.
175. Kadish, K. M.; Tabard, A.; Lee, W.; Liu, Y. H.; Ratti, C.; Guillard, R., Effect of pyridine binding and spin state on spectroscopic and electrochemical properties of phenyl- and (perfluorophenyl)iron(III) porphyrins. *Inorganic Chemistry* **1991**, 30, 1542.
176. Guillard, R.; Senglet, N.; Liu, Y. H.; Sazou, D.; Finsden, E.; Faure, D.; Des Courières, T.; Kadish, K. M., Studies of micellar metalloporphyrins. Synthesis and spectroscopic characterization of [(P)H₂]⁺ and [(P)M^{II}]⁺, where P = the dianion of 5-(4-*N*-hexadecylpyridiniumyl)-10,15,20-triphenylporphyrin bromide and M = VO, Ni, or Cu. *Inorganic Chemistry* **1991**, 30, 1898.
177. Kadish, K. M.; Dubois, D.; Barbe, J.-M.; Guillard, R., Electrochemical and spectroelectrochemical studies of tin(II) porphyrins. *Inorganic Chemistry* **1991**, 30, 4498.
178. Guillard, R.; Zrineh, A.; Tabard, A.; Courthaudon, L.; Han, B. C.; Ferhat, M.; Kadish, K. M., Metalloporphyrins with metal-metal \square -bonds. Synthesis, spectroscopic characterization, and electrochemistry of (P)MRe(CO)₅ where P is the dianion of octaethylporphyrin (OEP) or tetraphenylporphyrin (TPP) and M = Al, Ga, In or Tl. *Journal of Organometallic Chemistry* **1991**, 401, 227.
179. Collman, J. P.; Hutchinson, J. E.; Lopez, M. A.; Guillard, R.; Reed, R. A., Toward a dinitrogen electroreduction catalyst : characterization of a bis-amine, a \square_2 -hydrazine, a \square_2 -diazene, and a remarkably stable \square_2 -dinitrogen complex of a ruthenium cofacial diporphyrin. *Journal of the American Chemical Society* **1991**, 113, 2794.
180. Kadish, K. M.; Moninot, G.; Barbe, J.-M.; Guillard, R., The first electrochemistry of a monomeric europium porphyrin. Reaction of (tpp)Eu(facam) (tpp is the dianion of tetraphenylporphyrin, facam⁻ is the

- trifluoroacetylcamphor ion). *Journal of the Chemical Society, Chemical Communications* **1991**, 1124.
181. Aubert, T.; Farnier, M.; Guilard, R., Reactivity of iminophosphanes towards some symmetrical dicarbonyl dichlorides: syntheses and mechanisms. *Tetrahedron* **1991**, 47, 53.
 182. Guilard, R.; Barbe, J.-M.; Dong, S.-J.; Quiu, Q.-S., Synthesis and spectroscopic characterization of cobalt porphyrins and their catalytic activity towards dioxygen reduction. *Chinese Journal of Chemistry* **1992**, 10, 309.
 183. Kadish, K. M.; Dubois, D.; Koeller, S.; Barbe, J. M.; Guilard, R., Synthesis and characterization of stable tin porphyrins with a carbon sigma-bonded axial ligand. *Inorganic Chemistry* **1992**, 31, 3292.
 184. Tran-Thi, T. H.; Dormond, A.; Guilard, R., Long-lived transient excited states in oligomeric porphyrins. Thorium porphyrins. *Journal of Physical Chemistry* **1992**, 96, 3139.
 185. Collman, J. P.; Wagenknecht, P. S.; Hutchison, J. E.; Lewis, N. S.; Lopez, M. A.; Guilard, R.; L'Her, M.; Bothner-By, A. A.; Mishra, P. K., Dihydrogen complexes of metalloporphyrins: characterization and catalytic hydrogen oxidation activity. *Journal of the American Chemical Society* **1992**, 114, 5654.
 186. Collman, J. P.; Hutchison, J. E.; Lopez, M. A.; Guilard, R., A stable dinitrogen complex of a ruthenium cofacial diporphyrin. *Journal of the American Chemical Society* **1992**, 114, 8066.
 187. Collman, J. P.; Hutchison, J. E.; Ennis, M. S.; Lopez, M. A.; Guilard, R., Reduced nitrogen hydride complexes of a cofacial metallodiporphyrin and their oxidative interconversion. An analysis of ammonia oxidation and prospects for a dinitrogen electroreduction catalyst based on cofacial metallodiporphyrins. *Journal of the American Chemical Society* **1992**, 114, 8074.
 188. Collman, J. P.; Hutchison, J. E.; Lopez, M. A.; Tabard, A.; Guilard, R.; Seok, W. K.; Ibers, J. A.; L'Her, M., Synthesis and characterization of a superoxo complex of the dicobalt cofacial diporphyrin [(m-O₂)Co₂(DPB)(1,5-diphenylimidazole)₂][PF₆], the structure of the parent dicobalt diporphyrin Co₂(DPB), and a new synthesis of the free-base cofacial diporphyrin H₄(DPB). *Journal of the American Chemical Society* **1992**, 114, 9869.
 189. Guilard, R.; Lopez, M. A.; Tabard, A.; Richard, P.; Lecomte, C.; Brandès, S.; Hutchison, J. E.; Collman, J. P., Synthesis and characterization of novel cobalt aluminum cofacial porphyrins. First crystal and molecular structure of a heterobimetallic biphenylene pillared cofacial diporphyrin. *Journal of the American Chemical Society* **1992**, 114, 9877.
 190. Guilard, R.; Jagerovic, N.; Tabard, A.; Naillon, C.; Kadish, K. M., Synthesis, spectroscopic and electrochemical characterization of different isomer types in tetrazolatoindium(III) porphyrins. *Journal of the Chemical Society, Dalton Transactions* **1992**, 1957.
 191. Guilard, R.; Barbe, J. M.; Fahim, M.; Atmani, A.; Moninot, G.; Kadish, K. M., Synthesis of carbenoid-bonded binuclear porphyrins which contain a single hydrophobic chain. Spectroscopic and electrochemical characterization of (P)SnFe(CO)₄. *New Journal of Chemistry* **1992**, 16, 815.
 192. Vogel, E.; Koch, P.; Hou, X.-L.; Lex, J.; Lausmann, M.; Kisters, M.; Aukauloo, M. A.; Richard, P.; Guilard, R., New porphycene ligands: octaethyl- and etioporphycene (OEPc and EtioPc) - Tetracoordinated and pentacoordinated zinc complexes of OEPc. *Angewandte Chemie, International Edition* **1993**, 32, 1600.
 193. El-Borai, M. A.; El-Helnawy, G. B.; Assar, S. S.; Guilard, R., Absorption and fluorescence characterization of Ge(II) and Sn(II) octaethylporphyrin chloride. *Canadian Journal of Applied Spectroscopy* **1993**, 38, 51.
 194. Collman, J. P.; Ha, Y.; Guilard, R.; Lopez, M. A., Chemistry of a cofacial dirhodium diporphyrin: synthesis and reactivity of Rh₂DPB. *Inorganic Chemistry* **1993**, 32, 1788.
 195. Kadish, K. M.; D'Souza, F.; Van Caemelbecke, E.; Villard, A.; Lee, J.-D.; Tabard, A.; Guilard, R., Mechanistic details for the electroreduction of fluorophenyl σ -bonded iron(III) porphyrins in non-coordinating solvents. *Inorganic Chemistry* **1993**, 32, 4179.
 196. Collman, J. P.; Wagenknecht, P. S.; Hutchison, J. E.; Lewis, N. S.; Lopez, M. A.; Guilard, R.; L'Her, M.; Bothner-By, A. A.; Mishra, P. K., Dihydrogen complexes of metalloporphyrins: characterization and catalytic hydrogen oxidation activity. [Erratum to document cited in CA117(4):34433t]. *Journal of the American Chemical Society* **1993**, 115, 4947.
 197. Kadish, K. M.; Moninot, G.; Hu, Y.; Dubois, D.; Ibnlfassi, A.; Barbe, J. M.; Guilard, R., Double-decker actinide porphyrins and phthalocyanines. Synthesis and spectroscopic characterization of neutral, oxidized, and reduced homo- and heteroleptic complexes. *Journal of the American Chemical Society* **1993**, 115, 8153.
 198. Collman, J. P.; Ha, Y. Y.; Wagenknecht, P. S.; Lopez, M. A.; Guilard, R., Cofacial bisorganometallic diporphyrins: synthetic control in proton reduction catalysis. *Journal of the American Chemical Society* **1993**, 115, 9080.
 199. Kadish, K. M.; Van Caemelbecke, E.; D'Souza, F.; Medforth, C. J.; Smith, K. M.; Tabard, A.; Guilard, R., Generation of a stable sigma-bonded iron(IV) porphyrin. Formation and reactivity of [(OETPP)Fe(IV)(C₆H₅)]ⁿ⁺ (n = 1-3, OETPP = dianion of 2,3,7,8,12,13,17,18-octaethyl-5,10,15,20-tetraphenylporphyrin). *Organometallics* **1993**, 12, 2411.

200. Kadish, K. M.; D'Souza, F.; Van Caemelbecke, E.; Tabard, A.; Guilard, R. In *Redox behavior of phenyl π -bonded iron(III) porphyrins. Effect of metal ion and ring basicity on potentials and site of electron transfer*, Proceedings of the Fifth International Symposium on Redox Mechanisms and Interfacial Properties of Molecules of Biological Importance, Princeton, N. J., 1993; Shultz, F. A.; Taniguchi, I., Eds.; The Electrochemical Society, Inc.: Princeton, N. J., 1993; pp 125.
201. Kadish, K. M.; Boulas, P.; D'Souza, F.; Aukauloo, M. A.; Guilard, R.; Lausmann, M.; Vogel, E., Electrode reactions of m-oxo iron(III) porphycene dimers. Formation of stable $[[(\text{Pc})\text{Fe}]_2\text{O}]^n$ complexes where n=-4 to +4. *Inorganic Chemistry* **1994**, 33, 471.
202. Kadish, K. M.; D'Souza, F.; Van Caemelbecke, E.; Boulas, P.; Vogel, E.; Aukauloo, A. M.; Guilard, R., Electrochemistry of new s-bonded metal(III) complexes with tetrapyrrole ligands. Reactions of $(\text{EtioPc})\text{M}(\text{C}_6\text{H}_5)$ and $(\text{EtioPc})\text{FeCl}$ where M = Fe or In and EtioPc is the dianion of 2,7,12,17-tetraethyl-3,6,13,16-tetramethylporphycene. *Inorganic Chemistry* **1994**, 33, 4474.
203. Dong, S. J.; Qiu, Q. S.; Guilard, R.; Tabard, A., Electrochemical behavior of [octaethylporphyrin iron(III)-sigma-bonded pyrrole] and its electrocatalytic activity for the reduction of dioxygen. *Journal of Electroanalytical Chemistry* **1994**, 372, 171.
204. D'Souza, F.; Boulas, P.; Aukauloo, A. M.; Guilard, R.; Kisters, M.; Vogel, E.; Kadish, K. M., Electrochemical, UV-visible, and EPR characterization of metalloporphycenes containing first-row transition metals. *Journal of Physical Chemistry* **1994**, 98, 11885.
205. Guilard, R.; Brandès, S.; Tabard, A.; Bouhmaida, N.; Lecomte, C.; Richard, P.; Latour, J.-M., Synthesis, characterization, and reactivity toward dioxygen of copper manganese cofacial porphyrins. Crystal and molecular structures of a heterobimetallic biphenylene-pillared cofacial diporphyrin. *Journal of the American Chemical Society* **1994**, 116, 10202.
206. Barbe, J. M.; Richard, P.; Aukauloo, M. A.; Lecomte, C.; Petit, P.; Guilard, R., Electrocrystallization and X-ray structure of a new porphycene-based material, $[\text{Ni}(\text{OMPC})]_{2.5}(\text{BF}_4)_2 \cdot \text{C}_{10}\text{H}_7\text{Cl}$. *Journal of the Chemical Society, Chemical Communications* **1994**, 2757.
207. Koeller, S.; Cocolios, P.; Guilard, R., Synthesis of bimetallic complexes based on a new porphyrin-cyclam dinucleating ligand and their reactivity towards dioxygen. *New Journal of Chemistry* **1994**, 18, 849.
208. Aukauloo, M. A.; Guilard, R., The "etioporphycerin": synthesis and characterization of a new porphyrin isomer. *New Journal of Chemistry* **1994**, 18, 1205.
209. Boitrel, B.; Guilard, R., First synthesis of single-"strapped cyclam-porphyrins". *Tetrahedron Letters* **1994**, 35, 3719.
210. Zrineh, A.; Bahja, K.; Ferhat, M.; Barbe, J. M.; Guilard, R., Metal elements present in black phosphate minerals of Youssoufia (Morocco), characterization of vanadyl and nickel porphyrins. *Analisis* **1995**, 23, 213.
211. Meunier, I.; Mishra, A. K.; Hanquet, B.; Cocolios, P.; Guilard, R., Synthesis and characterization of various unsubstituted and mono-N-substituted tetraazamacrocycles. *Canadian Journal of Chemistry* **1995**, 73, 685.
212. Dong, S. J.; Liu, B. F.; Liu, J. L.; Tabard, A.; Guilard, R., Kinetic study of electrocatalytic reduction of hydrogen peroxide at iron(III) porphyrin modified glassy carbon electrode in alkaline medium using the rotation-scan method. *Electroanalysis* **1995**, 7, 537.
213. Guilard, R.; Barbe, J.-M.; Ibnlfassi, A.; Zrineh, A.; Adamian, V. A.; Kadish, K. M., Synthesis, characterization, and electrochemistry of heteroleptic double-decker complexes of the type phthalocyaninato-porphyrinato-zirconium(IV) or -hafnium(IV). *Inorganic Chemistry* **1995**, 34, 1472.
214. Kadish, K. M.; Van Caemelbecke, E.; D'Souza, F.; Medforth, C. J.; Smith, K. M.; Tabard, A.; Guilard, R., Electrochemistry and spectroelectrochemistry of π -bonded iron(III) porphyrins with nonplanar porphyrin rings. Reactions of $(\text{OETPP})\text{Fe}(\text{R})$ and $(\text{OETPP})\text{FeCl}$, where R = C_6H_5 , $\text{C}_6\text{F}_4\text{H}$, or C_6F_5 and OETPP is the dianion of 2,3,7,8,12,13,17,18-octaethyl-5,10,15,20-tetraphenylporphyrin. *Inorganic Chemistry* **1995**, 34, 2984.
215. Gouérec, P.; Biloul, A.; Contamin, O.; Scarbeck, G.; Savy, M.; Barbe, J. M.; Guilard, R., Dioxygen reduction electrocatalysis in acidic media: effect of peripheral ligand substitution on cobalt tetraphenylporphyrin. *Journal of Electroanalytical Chemistry* **1995**, 398, 67.
216. Guilard, R.; Brandès, S.; Tardieux, C.; Tabard, A.; L'Her, M.; Miry, C.; Gouérec, P.; Knop, Y.; Collman, J. P., Synthesis and characterization of cofacial metallodiporphyrins involving cobalt and Lewis acid metals: new dinuclear multielectron redox catalysts of dioxygen reduction. *Journal of the American Chemical Society* **1995**, 117, 11721.
217. Lachkar, M.; Andrioletti, B.; Boitrel, B.; Guilard, R.; Atmani, A., Synthesis of newcylindrical macrotricyclic molecules based on tetraazamacrocycle. *New Journal of Chemistry* **1995**, 19, 777.
218. Dahaoui-Gindrey, V.; Lecomte, C.; Gros, C.; Mishra, A. K.; Guilard, R., Synthesis, characterization and X-ray crystal structures of cyclam derivatives. 1. 1,4,8,11-(tetra-2-carbamoylethyl)-1,4,8,11-tetraazacyclotetradecane $\text{TETPA} \cdot 2\text{H}_2\text{O}$ and its bis-protonated form $(\text{H}_2\text{TETPA})^{2+} \cdot 2\text{NO}_3^- \cdot 2\text{H}_2\text{O}$. *New Journal of Chemistry* **1995**, 19, 831.

219. Dahaoui-Gindrey, V.; Lecomte, C.; Chollet, H.; Mishra, A. K.; Mehadji, C.; Guillard, R., Synthesis, characterization, and X-ray crystal structures of cyclam derivatives. 2. Heptahydrate tetraprotonated 1,4,8,11-(tetra-2-carboxyethyl)-1,4,8,11-tetraazacyclotetradecane $H_4TETP \cdot 7H_2O$, the perchlorate pentaprotonated form $(H_5TETP)^+(ClO_4^-)$, and the tetrachloride dihydrate octaprotonated form $(H_8TETP)^{4+} \cdot 4Cl^- \cdot 2H_2O$. *New Journal of Chemistry* **1995**, 19, 839.
220. Guillard, R.; Jagerovic, N.; Barbe, J. M.; Liu, Y. H.; Perrot, I.; Naillon, C.; Van Caemelbecke, E.; Kadish, K. M., Synthesis, spectroscopic and electrochemical properties of tetrazolatomanganese(III) porphyrins. *Polyhedron* **1995**, 14, 3041.
221. Guillard, R.; Aukauloo, M. A.; Tardieux, C.; Vogel, E. Synthesis of a new alkylated porphycene. *Synthesis* **1995**, 1480.
222. Granier, C.; Guillard, R., First unequivocal synthesis of 1 or 8-N-monosubstituted 1,4,8,12-tetraazacyclopentadecane. *Tetrahedron* **1995**, 51, 1197.
223. Boitrel, B.; Andrioletti, B.; Lachkar, M.; Guillard, R., Characterization and application of a new diprotected cyclam: a novel two-step synthesis of linked tetraazamacrocycles. *Tetrahedron Letters* **1995**, 36, 4995.
224. Brandès, S.; Gros, C.; Denat, F.; Pullumbi, P.; Guillard, R., New facile and convenient synthesis of bispolyazamacrocycles using Boc protection. Determination of geometric parameters of dinuclear copper(II) complexes using ESR spectroscopy and molecular mechanics calculations. *Bulletin de la Société Chimique de France* **1996**, 133, 65.
225. Périé, K.; Barbe, J.-M.; Cocolios, P.; Guillard, R., Synthesis of new sterically hindered porphyrins and their corresponding manganese(III) derivatives. Potential catalysts for oxidation reactions by ozone. *Bulletin de la Société Chimique de France* **1996**, 133, (7-8), 697.
226. Brandès, S.; Cocolios, P.; Guillard, R., New synthesis of cylindrical macrotricyclic ligand in tetraazamacrocyclic series. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1996**, 322, 827.
227. Andrioletti, B.; Boitrel, B.; Guillard, R., Grafting cyclams or related compounds over a porphyrin. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1996**, 323, 859.
228. D'Souza, F.; Boulas, P. L.; Kisters, M.; Sambrotta, L.; Aukauloo, A. M.; Guillard, R.; Kadish, K. M., Effect of peripheral substitution and extended conjugation on the redox potentials of nickel porphycenes. *Inorganic Chemistry* **1996**, 35, 5743.
229. Guillard, R.; Fahim, M.; Zaegel, F.; Barbe, J. M.; D'Souza, F.; Atmani, A.; Adamian, V. A.; Kadish, K. M., Metallomacrocycles with metal-metal bonds: synthesis, characterization and electrochemistry of $[(P)SnRe(CO)_5]BF_4$ and $[\{(P)Sn\}_2Re(CO)_4]BF_4$ derivatives, where P equals tetra-*p*-tolylporphyrin or tetra-*m*-tolylporphyrin. *Inorganica Chimica Acta* **1996**, 252, 375.
230. Gros, C.; Rabiet, F.; Denat, F.; Brandès, S.; Chollet, H.; Guillard, R., New silica-gel-bound polyazacycloalkanes and characterization of their copper(II) complexes using electron spin resonance spectroscopy. *Journal of the Chemical Society, Dalton Transactions* **1996**, 1209.
231. Granier, C.; Guillard, R., Acidity constants, dioxygen affinity, UV-visible, ESR, and electrochemical studies of some cobalt(II) (N- or C-monosubstituted) tetraazamacrocyclic complexes: development of an electrochemical dioxygen generator. *Microchemical Journal* **1996**, 53, 109.
232. Mellot, C.; Lignières, J.; Pullumbi, P.; Guillard, R., Applications of molecular modeling in the study of small molecules (N_2 , O_2 , rare gas). Interactions with complex molecular systems like zeolites and macrocycles. *Revue de l'Institut Français du Pétrole* **1996**, 51, 81.
233. Gros, C.; Chollet, H.; Mishra, A. K.; Guillard, R., A new versatile synthesis of N,N',N'',N''' -tetra-(2-carboxyethyl)- and N,N',N'',N''' -tetra-(3-aminopropyl)-tetraazacycloalkanes by Michael addition of polyazacycloalkanes to acrylic acid and acrylonitrile. *Synthetic Communications* **1996**, 26, 35.
234. Dahaoui-Gindrey, V.; Dahaoui, S.; Lecomte, C.; Barbette, F.; Guillard, R., Disodium hexadecahydrate diprotonated form of 1,4,8,11-tetra(2-carboxy)ethyl-1,4,8,11-tetraazacyclotetradecane $(H_2TETP)^{2-}$ at 110 K. *Acta Crystallographica, Section C: Crystal Structure Communications* **1997**, 53, 1797.
235. Lecomte, C.; Dahaoui-Gindrey, V.; Chollet, H.; Gros, C.; Mishra, A. K.; Barbette, F.; Pullumbi, P.; Guillard, R., Prediction of the coordination scheme of lanthanide N-tetrasubstituted tetraazamacrocycles: an X-ray crystallography and molecular modeling study. *Inorganic Chemistry* **1997**, 36, 3827.
236. Lachkar, M.; Tabard, A.; Brandès, S.; Guillard, R.; Atmani, A.; De Cian, A.; Fischer, J.; Weiss, R., Synthesis and spectroscopic and structural characterization of two novel dilutetium cofacial porphyrin dimers. *Inorganic Chemistry* **1997**, 36, 4141.
237. Gotte, V.; Rogalev, A.; Goulon, J.; GoulonGinet, C.; Michon, L.; Guillard, R.; Martin, D., A study using sulfur K-edge XAS of bitumens, asphaltenes, maltenes and their oxidation products by comparison with model compounds. *Journal de Physique IV* **1997**, 7, 667.
238. Gotte, V.; Goulon, J.; Rogalev, A.; Goulon-Ginet, C.; Périé, K.; Barbe, J.-M.; Guillard, R.; Cocolios, P., XAFS studies of high-valent porphyrinato manganese complexes with ozone. *Journal de Physique IV* **1997**, 7, C2/663.

239. Guillard, R.; Pichon-Pesme, B.; Lachekar, H.; Lecomte, C.; Aukauloo, A. M.; Boulas, P.; Kadish, K. M., Synthesis and electrochemistry of aluminum porphycenes. Crystal and molecular structure of methyl- σ -bonded aluminum etioporphycene. *Journal of Porphyrins and Phthalocyanines* **1997**, 1, (2), 109.
240. Guillard, R.; Siri, O.; Tabard, A.; Broeker, G.; Richard, P.; Nurco, D. J.; Smith, K. M., One-pot synthesis, physicochemical characterization and crystal structures of cis- and trans-(1,4,8,11-tetraazacyclotetradecane)dichloroiron(III) complexes. *Journal of the Chemical Society, Dalton Transactions* **1997**, (19), 3459.
241. Lemeune, S.; Barbe, J.-M.; Trichet, A.; Guillard, R., Fluorescent brightener 28 removal by ozonation or advanced oxidation processes (O_3/H_2O_2). *Ozone: Science and Engineering* **1997**, 19, 129.
242. Guillard, R.; Bessmertnykh, A. G.; Beletskaya, I. P., 1,4,8,11-Tetraazabicyclo[9.3.1]pentadecanes: synthesis and use of a new strategy for the selective cis-N-4,N-8-difunctionalization of cyclam derivatives. *Synlett* **1997**, 1190.
243. Rabet, F.; Denat, F.; Guillard, R., A new synthesis of macrotricyclic ligand based on 1,4,8,11-tetraazacyclotetradecane. *Synthetic Communications* **1997**, 27, 979.
244. Beletskaya, I. P.; Bessmertnykh, A. G.; Guillard, R., Palladium-catalyzed synthesis of aryl-substituted polyamine compounds from aryl halides. *Tetrahedron Letters* **1997**, 38, 2287.
245. Denat, F.; Lacour, S.; Brandès, S.; Guillard, R., A two-step synthesis of new macrobicyclic aza-ligands starting from "trans" dioxocyclam as diprotected macrocycle. *Tetrahedron Letters* **1997**, 38, 4417.
246. Jérôme, F.; Gros, C. P.; Tardieux, C.; Barbe, J.-M.; Guillard, R., First synthesis of sterically hindered cofacial bis(corroles) and their bis(cobalt) complexes. *Chemical Communications* **1998**, 2007.
247. Siri, O.; Royal, G.; Tabard, A.; Guillard, R.; Huch, V.; Veith, M., Synthesis and characterization of 3,3,10,10-tetramethyl-1,5,8,12-tetraazacyclotetradecane. A new route to macrocyclic polyamides and polyamines. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **1998**, 557.
248. Meyer, M.; Dahaoui-Gindrey, V.; Lecomte, C.; Guillard, R., Conformations and coordination schemes of carboxylate and carbamoyl derivatives of the tetraazamacrocycles cyclen and cyclam, and the relation to their protonation states. *Coordination Chemistry Reviews* **1998**, 180, 1313.
249. Royal, R.; Dahaoui-Gindrey, V.; Tabard, A.; Guillard, R.; Pullumbi, P.; Lecomte, C., New synthesis of trans disubstituted cyclam macrocycles. Elucidation of the disubstitution mechanism on the basis of X-ray data and molecular modeling. *European Journal of Organic Chemistry* **1998**, 1971.
250. Brandès, S.; Denat, F.; Lacour, S.; Rabet, F.; Barbette, F.; Pullumbi, P.; Guillard, R., Synthesis of macropolycyclic based on tetraazacycloalkanes. *European Journal of Organic Chemistry* **1998**, 2349.
251. Guillard, R.; Périé, K.; Barbe, J.-M.; Nurco, D. J.; Smith, K. M.; Van Caemelbecke, E.; Kadish, K. M., Electrochemical and spectroscopic characterization of manganese(III) dodecaphenylporphyrin derivatives and X-ray structural determination of Chloro(5,10,15,20-tetrakis(pentafluorophenyl)-2,3,7,8,12,13,17,18 -octaphenylporphyrinato)-manganese(III). Formation of a manganese(IV) species by ozone and electrochemical oxidation. *Inorganic Chemistry* **1998**, 37, 973.
252. Lachkar, M.; Guillard, R.; Atmani, A.; De Cian, A.; Fischer, J.; Weiss, R., Synthesis of new binucleating cylindrical macrotricyclic ligands where two cyclam rings are in a face-to-face conformation. Characterization of their dicopper(II) and dinickel(II) complexes. *Inorganic Chemistry* **1998**, 37, 1575.
253. Kadish, K. M.; Van Caemelbecke, E.; Gueletii, E.; Fukuzumi, S.; Miyamoto, K.; Suenobu, T.; Tabard, A.; Guillard, R., Kinetic and thermodynamic studies of iron(III) and iron(IV) σ -bonded porphyrins. Formation and reactivity of $[(OEP)Fe(R)]^{n+}$, where OEP is the dianion of octaethylporphyrin ($n = 0, 1, 2, 3$) and $R = C_6H_5, 3,4,5-C_6F_3H_2, 2,4,6-C_6F_3H_2, C_6F_4H, \text{ or } C_6F_5$. *Inorganic Chemistry* **1998**, 37, (8), 1759.
254. Kadish, K. M.; Boulas, P. L.; Kisters, M.; Vogel, E.; Aukauloo, A. M.; D'Souza, F.; Guillard, R., Synthesis and electrochemical reactivity of sigma-bonded and N-substituted cobalt porphycenes. *Inorganic Chemistry* **1998**, 37, 2693.
255. Kadish, K. M.; Tabard, A.; Van Caemelbecke, E.; Aukauloo, A. M.; Richard, P.; Guillard, R., Physicochemical characterization of sigma-bonded aryl iron(III) porphycenes. X-ray structures of (Etiopc)Fe(3,5- $C_6F_2H_3$) and (Etiopc)In(C_6H_5), where Etiopc is the dianion of 2,7,12,17-tetraethyl-3,6,13,16-tetramethylporphycene. *Inorganic Chemistry* **1998**, 37, 6168.
256. Fares, K.; Landy, P.; Guillard, R.; Voilley, A., Physicochemical Interactions between aroma compounds and milk proteins : effect of water and protein modification. *Journal of Dairy Science* **1998**, 81, 82.
257. Tardieux, C.; Gros, C. P.; Guillard, R., On corrole chemistry. An isomerization study and oxidative cleavage of the corrole macroring to a biliverdin structure. *Journal of Heterocyclic Chemistry* **1998**, 35, 965.
258. Pullumbi, P.; Lemeune, S.; Barbe, J.-M.; Trichet, A.; Guillard, R., Experimental and theoretical study of stereoelectronic and H-bond control of reactivity in alpha- and beta-methyl D-glucopyranoside ozonolysis. *Journal of Molecular Structure (Theoretical Chemistry)* **1998**, 432, 169.

259. Andrioletti, B.; Boitrel, B.; Guillard, R., Synthesis and characterization of a new series of potential hemoprotein analogues: "Arbor" porphyrins. *Journal of Organic Chemistry* **1998**, 63, 1312.
260. Comte, C.; Gros, C. P.; Guillard, R.; Khoury, R. G.; Smith, K. M., Facile synthesis of a bis-linked dioxocyclam porphyrin. *Journal of Porphyrins and Phthalocyanines* **1998**, 2, 377.
261. Létumier, F.; Broeker, G.; Barbe, J.-M.; Guillard, R.; Lucas, D.; Dahoui-Gindrey, V.; Lecomte, C.; Thouin, L.; Amatore, C., Dichloro (1,4,8,11-tetraazacyclotetradecane)manganese(III) chloride cis-trans isomerization evidenced by infrared and electrochemical studies. *Journal of the Chemical Society, Dalton Transactions* **1998**, 2233.
262. Brandès, S.; Lacour, S.; Denat, F.; Pullumbi, P.; Guillard, R., Convenient synthesis of new tetraazamacrocyclic-based macrobicycles. *Journal of the Chemical Society, Perkin Transactions 1* **1998**, 639.
263. Comte, C.; Gros, C. P.; Koeller, S.; Guillard, R.; Nurco, D. J.; Smith, K. M., Synthesis and characterization of a novel series of bis-linked diaza-18-crown-6 porphyrins. *New Journal of Chemistry* **1998**, 621.
264. Inisan, C.; Saillard, J.-Y.; Guillard, R.; Tabard, A.; Le Mest, Y., Electrooxidation of porphyrin free bases: fate of the p-cation radical. *New Journal of Chemistry* **1998**, 823.
265. Jérôme, F.; Gros, C. P.; Tardieux, C.; Barbe, J.-M.; Guillard, R., Synthesis of a "face-to-face" porphyrin-corrole. A potential precursor of a catalyst for the four-electron reduction of dioxygen. *New Journal of Chemistry* **1998**, 22, 1327.
266. Ricard, D.; Andrioletti, B.; Boitrel, B.; Guillard, R., High affinity of 'arbor' iron porphyrins for dioxygen. *New Journal of Chemistry* **1998**, 22, (12), 1331.
267. Beletskaya, I. P.; Bessmertnykh, A. G.; Mishechkin, R. A.; Guillard, R., Palladium-catalyzed amination of dihalobenzenes. *Russian Chemical Bulletin* **1998**, 47, 1416.
268. Tardieux, C.; Bolze, F.; Gros, C. P.; Guillard, R., New one-step synthesis of 3,4-disubstituted pyrrole-2,5-dicarbaldehydes. *Synthesis* **1998**, 267.
269. Fasseur, D.; Lacour, S.; Guillard, R., Unequivocal synthesis of 1,9-dibenzyl-1,5,9,13-tetracyclohexadecane. *Synthetic Communications* **1998**, 28, 285.
270. Fukuzumi, S.; Nakanishi, I.; Barbe, J.-M.; Guillard, R.; Van Caemelbecke, E.; Guo, N.; Kadish, K. M., Decreased electron transfer rates of manganese porphyrins with conformational distortion of the macrocycle. *Angewandte Chemie, International Edition* **1999**, 38, 964.
271. Schünemann, V.; Gerdan, M.; Trautwein, A. X.; Haoudi, N.; Mandon, D.; Fischer, J.; Weiss, R.; Tabard, A.; Guillard, R., The 5/2,3/2 spin admixture in the chloroiron(III) derivative of the sterically crowded 2,3,7,8,12,13,17,18-octaethyl-5,10,15,20-tetraphenylporphyrin. *Angewandte Chemie, International Edition* **1999**, 38, 3181.
272. Dubois, G.; Corriu, R. J. P.; Reyé, C.; Brandès, S.; Denat, F.; Guillard, R., First organic-inorganic hybrid materials with controlled porosity incorporating cyclam units. *Chemical Communications* **1999**, 2283.
273. Faderl, J.; Deobald, B.; Guillard, R.; Pritzkow, H.; Siebert, W., Syntheses, structures, and reactivity of 2,5-diboryl-1-alkylpyrroles and di(1-alkyl-2-pyrrolyl)boranes. *European Journal of Inorganic Chemistry* **1999**, 399.
274. Fukuzumi, S.; Nakanishi, I.; Tanaka, K.; Tabard, A.; Guillard, R.; Van Caemelbecke, E.; Kadish, K. M., Migration reactivities of s-bonded ligands of organoiron and organocobalt porphyrins depending on different high oxidation states. *Inorganic Chemistry* **1999**, 38, 5000.
275. Fukuzumi, S.; Nakanishi, I.; Tanaka, K.; Suenobu, T.; Tabard, A.; Guillard, R.; Van Caemelbecke, E.; Kadish, K. M., Electron-transfer kinetics for generation of organoiron(IV) porphyrins and the iron(IV) porphyrin p radical cations. *Journal of the American Chemical Society* **1999**, 121, 785.
276. Létumier, F.; Barbe, J.-M.; Trichet, A.; Guillard, R., Ozonation reactions of monomer and dimer lignin models: influence of a catalytic amount of a manganese cyclam derivative on the ozonation reaction. *Ozone: Science and Engineering* **1999**, 21, 53.
277. Beletskaya, I. P.; Bessmertnykh, A. G.; Guillard, R., Halo-substituted aminobenzenes prepared by Pd-catalyzed amination. *Synlett* **1999**, 1459.
278. Tripier, R.; Siri, O.; Rabiet, F.; Denat, F.; Guillard, R., A two step synthesis of the new "octacyclam" and some other octaazacycloalkanes via reduction of tetraamide intermediates. *Tetrahedron Letters* **1999**, 40, 79.
279. Bucher, C.; Royal, G.; Barbe, J. M.; Guillard, R., First unequivocal synthesis of dissymmetrical trans N,N'-difunctionalized 1,4,8,11-tetraazacyclotetradecane. *Tetrahedron Letters* **1999**, 40, 2315.
280. Beletskaya, I. P.; Bessmertnykh, A. G.; Guillard, R., Palladium-catalyzed amination of aryl dibromides with secondary amines: synthetic and mechanistic aspects. *Tetrahedron Letters* **1999**, 40, 6393.
281. Jérôme, F.; Billier, B.; Barbe, J. M.; Espinosa, E.; Dahaoui, S.; Lecomte, C.; Guillard, R., Evidence for the

- formation of a Ru(III)-Ru(III) bond in a ruthenium corrole homodimer. *Angewandte Chemie, International Edition* **2000**, 39, 4051.
282. Bucher, C.; Duval, E.; Barbe, J. M.; Verpeaux, J. N.; Amatore, C.; Guilard, R., Synthesis, characterization and X-ray crystal structure of cyclam derivatives. Part III. Formation and electrochemically induced isomerization of copper complexes of 1,8-bis(N,N-dimethylcarbamoylmethyl)-4,11-dimethyl-1,4,8,11-tetraazacyclotetradecane. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **2000**, 3, 211.
 283. Nakanishi, I.; Fukuzumi, S.; Barbe, J. M.; Guilard, R.; Kadish, K. M., Base control of electron-transfer reactions of manganese(III) porphyrins. *European Journal of Inorganic Chemistry* **2000**, 1557.
 284. Reginato, G.; DiBari, L.; Salvadori, P.; Guilard, R., Chiral atropisomeric metalloporphyrins in the enantioselective styrene epoxidation. *European Journal of Organic Chemistry* **2000**, 1165.
 285. Kadish, K. M.; Ou, Z. P.; Adamian, V. A.; Guilard, R.; Gros, C. P.; Erben, C.; Will, S.; Vogel, E., Corroles with group 15 ions. 2. Synthesis and characterization of octaethylcorroles containing a phosphorus central atom. *Inorganic Chemistry* **2000**, 39, 5675.
 286. Gotte, V.; Goulon, J.; Goulon-Ginet, C.; Rogalev, A.; Natoli, C. R.; Perie, K.; Barbe, J. M.; Guilard, R., Structural studies using X-ray absorption spectroscopy of intermediates formed by reaction of ozone with halogeno(dodecaphenylporphyrinato)manganese(III) derivatives. *Journal of Physical Chemistry B* **2000**, 104, 1927.
 287. Michaudet, L.; Fasseur, D.; Guilard, R.; Ou, Z. P.; Kadish, K. M.; Dahaoui, S.; Lecomte, C., Synthesis, characterization and electrochemistry of bismuth porphyrins. X-ray crystal structure of (OEP)Bi(SO₃CF₃). *Journal of Porphyrins and Phthalocyanines* **2000**, 4, 261.
 288. Guilard, R.; Kadish, K. M.; Cook, M. J.; Sessler, J.; Smith, K. M.; Wohrle, D., First International Conference on Porphyrins and Phthalocyanines (ICPP-1) - Preface. *Journal of Porphyrins and Phthalocyanines* **2000**, 4, 313.
 289. Kadish, K. M.; Shao, J. G.; Ou, Z. P.; Comte, C.; Gros, C. P.; Guilard, R., Electrochemical and spectroscopic characterization of cobalt and zinc diaza-18-crown-6 porphyrins and of a zinc dioxocyclam porphyrin. *Journal of Porphyrins and Phthalocyanines* **2000**, 4, 639.
 290. Frémond, L.; Espinosa, E.; Meyer, M.; Denat, F.; Guilard, R.; Huch, V.; Veith, M., Synthesis, characterization and X-ray crystal structures of cyclam derivatives. Part IV. 1,4,8,11-tetraazacyclotetradecane-5,12-dione and its diprotonated forms. *New Journal of Chemistry* **2000**, 24, 959.
 291. Lemeune, S.; Barbe, J.-M.; Trichet, A.; Guilard, R., Degradation of cellulose models during an ozone treatment. Ozonation of glucose and cellobiose with oxygen or nitrogen as carrier gas at different pH. *Ozone: Science and Engineering* **2000**, 22, 447.
 292. Barbe, J.-M.; Guilard, R., Synthesis, spectroscopy and structural studies of metal-metal bonded metalloporphyrins. In *The Porphyrin Handbook*; Kadish, K. M.; Smith, K. M.; Guilard, R., Eds.; Academic Press: New York, 2000; Vol. 3, pp 211.
 293. Guilard, R.; Tabard, A.; Van Caemelbecke, E.; Kadish, K. M., Synthesis, spectroscopy and electrochemical properties of porphyrins with metal-carbon bonds. In *The Porphyrin Handbook*; Kadish, K. M.; Smith, K. M.; Guilard, R., Eds. Academic Press: New York, 2000; Vol. 3, pp 295.
 294. Denat, F.; Brandès, S.; Guilard, R., Strategies for the regioselective N-functionalization of tetraazacycloalkanes. From cyclam and cyclen towards more sophisticated molecules. *Synlett* **2000**, 561.
 295. Beletskaya, I. P.; Artamkina, G. A.; Ivushkin, V. A.; Guilard, R., Arylation of polyamines by perfluoroarenes. *Tetrahedron Letters* **2000**, 41, 313.
 296. Dahaoui-Gindrey, V.; Lecomte, C.; Barbette, F.; Pullumbi, P.; Gros, C. P.; Guilard, R.; Dahaoui, S., Confirmation by an X-ray crystallography study of a molecular modeling prediction about the coordination scheme of a new (1,4,8,11-(tetra-2-carboxyethyl)-1,4,8,11-tetraazacyclotetradecane)-cerium(III) complex. *Zeitschrift für Kristallographie* **2000**, 215, 293.
 297. Dubois, G.; Reyé, C.; Corriu, R. J. P.; Brandès, S.; Denat, F.; Guilard, R., Coordination chemistry in the solid : study of the incorporation of Cu(II) into cyclam-containing hybrid materials. *Angewandte Chemie, International Edition* **2001**, 40, 1087.
 298. Marcq, O.; Barbe, J. M.; Trichet, A.; Guilard, R., Origin and significance of the production of carbon dioxide during the ozonization of C-13-labeled D-glucose at different pH values. *Carbohydrate Research* **2001**, 333, 233.
 299. Tripier, R.; Lagrange, J. M.; Espinosa, E.; Denat, F.; Guilard, R., From new tricyclic bisaminal derivatives to trans-N,N'-disubstituted cyclams. *Chemical Communications* **2001**, 2728.
 300. Chollet, H.; Babouhot, J. L.; Guilard, R., Removal of actinides from alpha emitter contaminated solutions. *Chocs* **2001**, 25, 19.
 301. Guilard, R.; Jérôme, F.; Gros, C. P.; Barbe, J. M.; Ou, Z. P.; Shao, J. G.; Kadish, K. M., Synthesis of an

- anthracenyl bridged porphyrin-corrole bismacrocycle. Physicochemical and electrochemical characterisation of the biscobalt mu-superoxo derivative. *Comptes Rendus de l'Académie des Sciences, Série IIc: Chimie* **2001**, 4, 245.
302. Bucher, C.; Duval, E.; Espinosa, E.; Barbe, J. M.; Verpeaux, J. N.; Amatore, C.; Guillard, R., First direct synthesis of a trans-III complex of tetramethylcyclam. Physicochemical characterization, electrochemistry and X-ray crystal structure of 1,4,8,11-tetramethyl-1,4,8,11-tetraazacyclotetradecane copper(II) bistetrafluoroborate. *European Journal of Inorganic Chemistry* **2001**, 1077.
303. Harvey, P. D.; Proulx, N.; Martin, G.; Drouin, M.; Nurco, D. J.; Smith, K. M.; Bolze, F.; Gros, C. P.; Guillard, R., Preparation, characterization, and luminescence properties of gallium-metal face-to-face diporphyrins (M = H₂, GaL, Ru(CO)(OH), Co). *Inorganic Chemistry* **2001**, 40, 4134.
304. Guillard, R.; Gros, C. P.; Bolze, F.; Jérôme, F.; Ou, Z. P.; Shao, J. G.; Fischer, J.; Weiss, R.; Kadish, K. M., Alkyl and aryl substituted corroles. 1. Synthesis and characterization of free base and cobalt containing derivatives. X-ray structure of (Me₄Ph₅Cor)CoPy₂. *Inorganic Chemistry* **2001**, 40, 4845.
305. Guillard, R.; Jérôme, F.; Barbe, J. M.; Gros, C. P.; Ou, Z. P.; Shao, J.; Fischer, J.; Weiss, R.; Kadish, K. M., Alkyl and aryl substituted corroles. 2. Synthesis and characterization of linked "face-to-face" biscalcoroles. X-ray structure of (BCA)Co₂(Py)₃, where BCA represents a biscalcorole with an anthracenyl bridge. *Inorganic Chemistry* **2001**, 40, 4856.
306. Bucher, C.; Duval, E.; Barbe, J. M.; Verpeaux, J. N.; Amatore, C.; Guillard, R.; Le Pape, L.; Latour, J. M.; Dahaoui, S.; Lecomte, C., Synthesis, X-ray structure, electrochemical, and EPR studies of a pentacoordinated Mn(II) tetramethylcyclam complex. *Inorganic Chemistry* **2001**, 40, 5722.
307. Kurosaki, H.; Bucher, C.; Espinosa, E.; Barbe, J. M.; Guillard, R., Synthesis and characterization of a 1,8-difunctionalized dissymmetrical cyclam copper(II) complex bearing pyridylmethyl and N,N-dimethylcarbamoylmethyl groups. *Inorganica Chimica Acta* **2001**, 322, 145.
308. Bolze, F.; Gros, C. P.; Harvey, P. D.; Guillard, R., Luminescence properties of a cofacial dipalladium porphyrin dimer under argon and in the presence of dioxygen. *Journal of Porphyrins and Phthalocyanines* **2001**, 5, 569.
309. Kurosaki, H.; Yoshida, H.; Fujimoto, A.; Goto, M.; Shionoya, M.; Kimura, E.; Espinosa, E.; Barbe, J. M.; Guillard, R., Synthesis and crystal structures of palladium(II) complexes of 1,11-bis(2-pyridylmethyl)-1,4,8,11-tetraazacyclotetradecane-5,7-dione. *Journal of the Chemical Society, Dalton Transactions* **2001**, 898.
310. Jérôme, F.; Barbe, J. M.; Gros, C. P.; Guillard, R.; Fischer, J.; Weiss, R., Peculiar reactivity of face to face biscalcorole and porphyrin-corrole with a nickel(II) salt. X-ray structural characterization of a new nickel(II) bisoxocorrole. *New Journal of Chemistry* **2001**, 25, 93.
311. Denat, F.; Dubois, G.; Tripier, R.; Brandès, S.; Guillard, R., Silica gel bound cyclam. Synthesis and applications. *Phosphorus, Sulfur and Silicon and the Related Elements* **2001**, 168, 151.
312. Beletskaya, I. P.; Averin, A. D.; Bessmertnykh, A. G.; Guillard, R., Synthesis of new tetraazamacrocycles by Pd-catalyzed amination of 1,8-dichloroanthracene and 1,8-dichloroanthra-9,10-quinone. *Tetrahedron Letters* **2001**, 42, 4983.
313. Beletskaya, I. P.; Averin, A. D.; Bessmertnykh, A. G.; Guillard, R., Synthesis of diazacrown ethers based on anthracene and anthraquinone by Pd-catalyzed amination reactions. *Tetrahedron Letters* **2001**, 42, 4987.
314. Espinosa, E.; Meyer, M.; Bérard, D.; Guillard, R., [(1,4,8,11-Tetraazacyclotetradeca-1,4,8,11-tetrayl)tetraacetamide-kappa N-6(1),N-4,N-8,N-11,O-1,O-8]copper(II) sulfate 4.5-hydrate. *Acta Crystallographica, Section C: Crystal Structure Communications* **2002**, 58, m119.
315. Boschetti, F.; Denat, F.; Espinosa, E.; Guillard, R., An organic template approach for the synthesis of selectively functionalised tetraazacycloalkanes. *Chemical Communications* **2002**, 312.
316. Corriu, R. J. P.; Embert, F.; Guari, Y.; Reyé, C.; Guillard, R., Coordination chemistry in the solid : evidence for coordination modes within hybrid materials different from those in solution. *Chemistry, a European Journal* **2002**, 8, 5732.
317. Doukkali, A.; Saoiabi, A.; Zrineh, A.; Hamad, M.; Ferhat, M.; Barbe, J. M.; Guillard, R., Separation and identification of petroporphyrins extracted from the oil shales of Tarfaya : geochemical study. *Fuel* **2002**, 81, 467.
318. Kadish, K. M.; Ou, Z. P.; Shao, J. G.; Gros, C. P.; Barbe, J. M.; Jérôme, F.; Bolze, F.; Burdet, F.; Guillard, R., Alkyl and aryl substituted corroles. 3. Reactions of cofacial cobalt biscalcoroles and porphyrin-corroles with pyridine and carbon monoxide. *Inorganic Chemistry* **2002**, 41, 3990.
319. Weiss, R.; Fischer, J.; Bulach, V.; Schunemann, V.; Gerdan, M.; Trautwein, A. X.; Shelnut, J. A.; Gros, C. P.; Tabard, A.; Guillard, R., Structure and mixed spin state of the chloroiron(III) complex of 2,3,7,8,12,13,17,18-octaphenyl-5,10,15,20-tetraphenylporphyrin, Fe(Dpp)Cl. *Inorganica Chimica Acta* **2002**, 337, 223.

320. Bill, E.; Schunemann, V.; Trautwein, A. X.; Weiss, R.; Fischer, J.; Tabard, A.; Guillard, R., Mössbauer investigations of the hexachlorantimonate salt of the phenyliron 2,3,7,8,12,13,17,18-octaethyl-5,10,15,20-tetraphenylporphyrinate, [Fe(Oetpp)Ph]SbCl₆ and X-ray structure of the phenyliron(III) precursor Fe(III)(Oetpp)Ph. *Inorganica Chimica Acta* **2002**, 339, 420.
321. Merine, H.; Mesli, A.; Guillard, R.; Zeroukhi, A., Polarographic behavior of Schiff bases, N-benzylidene 3-aminopyridines. *Journal de la Société Algérienne de Chimie* **2002**, 12, 209.
322. Corriu, R. J. P.; Lancelle-Beltran, E.; Mehdi, A.; Reyé, C.; Brandès, S.; Guillard, R., Ordered mesoporous hybrid materials containing cobalt(II) Schiff base complex. *Journal of Materials Chemistry* **2002**, 12, 1355.
323. Dubois, G.; Tripier, R.; Brandès, S.; Denat, F.; Guillard, R., Cyclam complexes containing silica gels for dioxygen adsorption. *Journal of Materials Chemistry* **2002**, 12, 2255.
324. Kadish, K. M.; Burdet, F.; Jérôme, F.; Barbe, J. M.; Ou, Z. P.; Shao, J. G.; Guillard, R., Synthesis, physicochemical and electrochemical properties of metal-metal bonded ruthenium corrole homodimers. *Journal of Organometallic Chemistry* **2002**, 652, 69.
325. Bolze, F.; Gros, C. P.; Drouin, M.; Espinosa, E.; Harvey, P. D.; Guillard, R., Fine tuning of the photophysical properties of cofacial diporphyrins via the use of different spacers. *Journal of Organometallic Chemistry* **2002**, 643-644, 89.
326. Guillard, R.; Gryko, D. T.; Canard, G.; Barbe, J. M.; Koszarna, B.; Brandès, S.; Tasior, M., Synthesis of corroles bearing up to three different meso substituents. *Organic Letters* **2002**, 4, 4491.
327. Beletskaya, I. P.; Averin, A. D.; Bessmertnykh, A. G.; Denat, F.; Guillard, R., Synthesis of 1,8-bis(cyclam) and 1,8-bis(azacrown) substituted anthracenes by palladium-catalyzed arylation of cyclam. *Tetrahedron Letters* **2002**, 43, 1193.
328. Harvey, P. D.; Sicard, S.; Burdet, F.; Barbe, J.-M.; Guillard, R., On the $\square(\text{Ru})_2$ Raman mode in a ruthenium corrole homodimer. *Canadian Journal of Analytical Sciences and Spectroscopy* **2003**, 48, 121.
329. Corriu, R. J. P.; Lancelle-Beltran, E.; Mehdi, A.; Reyé, C.; Brandès, S.; Guillard, R., Hybrid materials containing metal(II) Schiff base complex covalently linked to the silica matrix by two Si-C bonds: reaction with dioxygen. *Chemistry of Materials* **2003**, 15, 3152.
330. Kadish, K. M.; Shao, J.; Ou, Z.; Gros Claude, P.; Bolze, F.; Barbe, J.-M.; Guillard, R., Alkyl- and aryl-substituted corroles. 4. Solvent effects on the electrochemical and spectral properties of cobalt corroles. *Inorganic Chemistry* **2003**, 42, 4062.
331. Amatore, C.; Barbe, J.-M.; Bucher, C.; Duval, E.; Guillard, R.; Verpeaux, J.-N., Electron transfer induced topological reorganisations in copper complexes of N-tetrasubstituted tetraazamacrocycles. *Inorganica Chimica Acta* **2003**, 356, 267.
332. Siri, O.; Tabard, A.; Pullumbi, P.; Guillard, R., Iron complexes acting as nitric oxide carriers. *Inorganica Chimica Acta* **2003**, 350, 633.
333. Barbe, J.-M.; Morata, G.; Espinosa, E.; Guillard, R., Synthesis of new singly metal-metal-bonded heterobinuclear complexes involving a porphyrin and a corrole. X-ray structure of the rhodium tetraphenylporphyrin-tin(2,3,7,13,17,18-hexamethyl-8,12-diethylcorrole) complex. *Journal of Porphyrins and Phthalocyanines* **2003**, 7, 120.
334. Barbe, J.-M.; Burdet, F.; Espinosa, E.; Gros, C.; Guillard, R., New insights into the synthesis of porphyrin-corrole and biscalcorrole systems. *Journal of Porphyrins and Phthalocyanines* **2003**, 7, 365.
335. Bolze, F.; Drouin, M.; Harvey, P. D.; Gros, C. P.; Espinosa, E.; Guillard, R., *Journal of Porphyrins and Phthalocyanines* **2003**, 7, 474.
336. Carré, F.; Corriu, R. J. P.; Lancelle-Beltran, E.; Mehdi, A.; Reyé, C.; Guillard, R.; Sykora, J.; van der Lee, A., X-ray crystal structures of copper(II) and cobalt(II) complexes with Schiff base ligands. Reactivity towards dioxygen. *Journal of the Chemical Society, Dalton Transactions* **2003**, 3211.
337. Guillard, R.; Barbe, J.-M.; Stern, C.; Kadish, K. M., New developments in corrole chemistry; Special emphasis on face-to-face bismacrocycles. In *The Porphyrin Handbook*; Kadish, K. M.; Smith, K. M.; Guillard, R., Eds.; Academic Press: San Diego, 2003; Vol. 18, pp 303.
338. Beletskaya, I. P.; Averin, A. D.; Borisenko, A. A.; Denat, F.; Guillard, R., Application of Pd-catalysed amines arylation for the synthesis of benzopolyazamacrocycles. *Tetrahedron Letters* **2003**, 44, 1433.
339. Barbette, F.; Rascalou, F.; Chollet, H.; Babouhot, J. L.; Denat, F.; Guillard, R., Extraction of uranyl ions from aqueous solutions using silica-gel-bound macrocycles for alpha contaminated wastewater treatment. *Analytica Chimica Acta* **2004**, 502, 179.
340. Boschetti, F.; Denat, F.; Espinosa, E.; Lagrange, J.-M.; Guillard, R., A powerful route to C-functionalised tetraazamacrocycles. *Chemical Communications* **2004**, 588.
341. Barbe, J.-M.; Canard, G.; Brandès, S.; Jérôme, F.; Dubois, G.; Guillard, R., Metalloporroles as sensing components for gas sensors: remarkable affinity and selectivity of cobalt(III) corroles for CO vs. O₂ and

- N₂. *Dalton Transactions* **2004**, 1208.
342. Pacholska, E.; Espinosa, E.; Guillard, R., New route to a face-to-face biscorrole free-base and the corresponding heterobimetallic copper(III)–silver(III) complex. *Dalton Transactions* **2004**, 3181.
343. Guillard, R.; Gros, C. P.; Barbe, J.-M.; Espinosa, E.; Jérôme, F.; Tabard, A.; Latour, J.-M.; Shao, J.; Ou, Z.; Kadish, K. M., Alkyl and aryl substituted corroles. 5. Synthesis, physicochemical properties and X-ray structural characterization of copper biscorroles and porphyrin-corrole dyads. *Inorganic Chemistry* **2004**, 43, 7441.
344. Meyer, M.; Frémond, L.; Espinosa, E.; Guillard, R.; Ou, Z.; Kadish, K. M., Synthesis, characterization, and X-ray crystal structures of cyclam derivatives. 5. Copper(II) binding studies of a pyridine-strapped 5,12-dioxocyclam-based macrobicycle. *Inorganic Chemistry* **2004**, 43, 5572.
345. Barbe, J.-M.; Stern, C.; Pacholska, E.; Espinosa, E.; Guillard, R., Improved routes for the synthesis of face-to-face bismacrocycles in porphyrin and corrole series. *Journal of Porphyrins and Phthalocyanines* **2004**, 8, 301.
346. Kadish, K. M.; Finikova, O. S.; Espinosa, E.; Gros, C. P.; Stefano, G. D.; Cheprakov, A. V.; Beletskaya, I. P.; Guillard, R., First highly distorted π -extended Fe(II) porphyrin – a unique model to elucidate factors affecting the electrochemical potentials. *Journal of Porphyrins and Phthalocyanines* **2004**, 8, 1062.
347. Faure, S.; Stern, C.; Guillard, R.; Harvey, P. D., Role of the spacer in the singlet-singlet energy transfer mechanism (Foerster vs Dexter) in cofacial bisporphyrins. *Journal of the American Chemical Society* **2004**, 126, 1253.
348. Fukuzumi, S.; Okamoto, K.; Gros, C. P.; Guillard, R., Mechanism of four-electron reduction of dioxygen to water by ferrocene derivatives in the presence of perchloric acid in benzonitrile, catalyzed by cofacial dicobalt porphyrins. *Journal of the American Chemical Society* **2004**, 126, 10441.
349. Fukuzumi, S.; Okamoto, K.; Tokuda, Y.; Gros, C. P.; Guillard, R., Dehydrogenation versus oxygenation in two-electron and four-electron reduction of dioxygen by 9-alkyl-10-methyl-9,10-dihydroacridines catalyzed by monomeric cobalt porphyrins and cofacial dicobalt porphyrins in the presence of perchloric acid. *Journal of the American Chemical Society* **2004**, 126, 17059.
350. Barbe, J.-M.; Canard, G.; Brandès, S.; Guillard, R., New organic-inorganic hybrid materials from sol-gel cocondensation of functionalized cobalt(III) corroles and alkoxyxilanes. Application to the selective detection of carbon monoxide. *Angewandte Chemie, International Edition* **2005**, 44, 3103.
351. Beletskaya, I. P.; Averin, A. D.; Ulanovskaya, O. A.; Fedotenko, I. A.; Borisenko, A. A.; Serebryakova, M. V.; Denat, F.; Guillard, R., Application of palladium-catalyzed amination to the synthesis of polyazamacrocycles containing 3,5-disubstituted pyridine. *Chemistry Letters* **2005**, 34, 1100.
352. Faure, S.; Stern, C.; Espinosa, E.; Douville, J.; Guillard, R.; Harvey, P. D., Triplet-triplet energy transfer controlled by the donor-acceptor distance in rigidly held palladium-containing cofacial bisporphyrins. *Chemistry, a European Journal* **2005**, 11, 3469.
353. Barbe, J.-M.; Burdet, F.; Espinosa, E.; Guillard, R., Synthesis and physicochemical characterization of bis(macrocycles) involving a porphyrin and a meso-substituted corrole - X-ray crystal structure of a [(free-base porphyrin)-corrole]bis(pyridine)cobalt complex. *European Journal of Inorganic Chemistry* **2005**, 1032.
354. Goulon, J.; Goulon-Ginet, C.; Rogalev, A.; Wilhelm, F.; Jaouen, N.; Cabaret, D.; Joly, Y.; Dubois, G.; Corriu, R. J. P.; David, G.; Brandès, S.; Guillard, R., A study using X-ray absorption and emission spectroscopies of dioxygen binding xerogels incorporating cyclam units complexed with copper salts. *European Journal of Inorganic Chemistry* **2005**, 2714.
355. Beletskaya, I. P.; Lemeune Bessmertnykh, A. G.; Averin, A. D.; Denat, F.; Guillard, R., Palladium-catalysed amination of 1,8- and 1,5-dichloroanthracenes and 1,8- and 1,5-dichloroanthraquinones. *European Journal of Organic Chemistry* **2005**, 281.
356. Beletskaya, I. P.; Lemeune Bessmertnykh, A. G.; Averin, A. D.; Denat, F.; Guillard, R., Palladium-Catalyzed Arylation of Linear and Cyclic Polyamines. *European Journal of Organic Chemistry* **2005**, 261.
357. Barbe, J.-M.; Canard, G.; Brandès, S.; Guillard, R., Synthesis and physicochemical characterization of meso-functionalized corroles: precursors of organic-inorganic hybrid materials. *European Journal of Organic Chemistry* **2005**, 4601.
358. Montméat, P.; Madonia, S.; Pasquinet, E.; Hairault, L.; Gros, C. P.; Barbe, J.-M.; Guillard, R., Metalloporphyrins as sensing material for quartz-crystal microbalance nitroaromatics sensors. *IEEE Sensors Journal* **2005**, 5, 610.
359. Cuenot, F.; Meyer, M.; Espinosa, E.; Guillard, R., Synthesis, characterization, and X-ray crystal structures of cyclam derivatives. Part VIII. Thermodynamic and kinetic appraisal of lead(II) chelation by octadentate carbamoyl-armed macrocycles. *Inorganic Chemistry* **2005**, 44, 7895.
360. Faure, S.; Stern, C.; Guillard, R.; Harvey, P. D., Synthesis and photophysical properties of meso-substituted

- bisporphyrins: comparative study of phosphorescence quenching for dioxygen sensing. *Inorganic Chemistry* **2005**, 44, 9232.
361. Guillard, R.; Burdet, F.; Barbe, J.-M.; Gros, C. P.; Espinosa, E.; Shao, J.; Ou, Z.; Zhan, R.; Kadish, K. M., Heterobimetallic complexes of cobalt(IV) porphyrin-corrole dyads. Synthesis, physicochemical properties and X-ray structural characterization. *Inorganic Chemistry* **2005**, 44, 3972.
 362. Kadish, K. M.; Shao, J.; Ou, Z.; Frémond, L.; Zhan, R.; Burdet, F.; Barbe, J.-M.; Gros, C.; Guillard, R., Electrochemistry, spectroelectrochemistry, chloride binding, and O₂ catalytic reactions of free-base porphyrin/cobalt corrole dyads. *Inorganic Chemistry* **2005**, 44, 6744.
 363. Kadish, K. M.; Shao, J.; Ou, Z.; Zhan, R.; Burdet, F.; Barbe, J.-M.; Gros, C.; Guillard, R., Electrochemistry and spectroelectrochemistry of heterobimetallic porphyrin-corrole dyads. Influence of spacer, metal ion and oxidation state on pyridine binding ability. *Inorganic Chemistry* **2005**, 44, 9023.
 364. Tremblay-Morin, J.-P.; Faure, S.; Samar, D.; Stern, C.; Guillard, R.; Harvey, P. D., Synthesis, characterization and photophysical properties of a free base and a biszinc(II) complex of 1,3-bisporphyrincalix[4]arene: evidence for “tunable intramolecular open and close conformations”. *Inorganic Chemistry* **2005**, 44, 2836.
 365. Cuenot, F.; Meyer, M.; Bucaille, A.; Guillard, R., A molecular approach to remove lead from drinking water. *Journal of Molecular Liquids* **2005**, 118, 89.
 366. Boschetti, F.; Denat, F.; Espinosa, E.; Tabard, A.; Dory, Y.; Guillard, R., Regioselective N-functionalization of tetraazacycloalkanes. *Journal of Organic Chemistry* **2005**, 70, 7042.
 367. Kadish, K.; Frémond, L.; Ou, Z.; Shao, J.; Shi, C.; Anson, F. C.; Burdet, F.; Gros, C. P.; Barbe, J.-M.; Guillard, R., Cobalt(III) corroles as electrocatalysts for the reduction of dioxygen: reactivity of a monocorrole, biscalloles, and porphyrin-corrole dyads. *Journal of the American Chemical Society* **2005**, 127, 5625.
 368. Brandès, S.; Denat, F.; Meyer, M.; Guillard, R., Apports des matériaux hybrides organiques-inorganiques en chimie séparative: de la molécule au procédé. *L'Actualité Chimique* **2005**, 108.
 369. Mehdi, A.; Reyé, C.; Brandès, S.; Guillard, R.; Corriu, R. J. P., Synthesis of large-pore ordered mesoporous silicas containing aminopropyl groups. *New Journal of Chemistry* **2005**, 29, 965.
 370. Meyer, M.; Frémond, L.; Tabard, A.; Espinosa, E.; Vollmer, G. Y.; Guillard, R.; Dory, Y., Synthesis, characterization and X-ray crystal structures of cyclam derivatives. Part VI. Proton binding studies of a pyridine-strapped 5,12-dioxocyclam-based macrobicycle. *New Journal of Chemistry* **2005**, 29, 99.
 371. Meyer, M.; Frémond, L.; Espinosa, E.; Brandès, S.; Vollmer, G. Y.; Guillard, R., Synthesis, characterization and X-ray crystal structures of cyclam derivatives. Part VII. Hydrogen-bond induced allosteric effects and protonation cooperativity in a macrotricyclic bisdioxocyclam receptor. *New Journal of Chemistry* **2005**, 29, 1121.
 372. Beletskaya, I. P.; Averin, A. D.; Pleshkova, N. A.; Borisenko, A. A.; Serebryakova, M. V.; Denat, F.; Guillard, R., Synthesis of new polyazamacrocycles incorporating the pyridine moiety. *Synlett* **2005**, 87.
 373. El Hammari, L.; Laghizil, A.; Saoiabi, A.; Barboux, P.; Meyer, M.; Brandès, S.; Guillard, R., Some factors affecting the removal of lead(II) ions from aqueous solution by porous hydroxyapatite: relationships between surface and adsorption properties. *Adsorption Science & Technology* **2006**, 24, 507.
 374. Gros, C. P.; Barbe, J.-M.; Espinosa, E.; Guillard, R., Room temperature auto-conversion of free-base corrole to free-base porphyrin. *Angewandte Chemie, International Edition* **2006**, 45, 5642.
 375. Denat, F.; Tripier, R.; Boschetti, F.; Espinosa, E.; Guillard, R.; Reaction of polyamines with diethyloxalate: a convenient route for the synthesis of tetraazacycloalkanes. *Arkivoc* **2006**, 212.
 376. Chaux, F.; Denat, F.; Espinosa, E.; Guillard, R., An easy route towards regioselectively difunctionalized cyclens and new cryptands. *Chemical Communications* **2006**, 5054.
 377. Chollet, H.; Denat, F.; Guillard, R., Molécules macrocycliques azotées pour la séquestration de métaux lourds. *Chocs* **2006**, 30.
 378. Kadish, K. M.; Frémond, L.; Burdet, F.; Barbe, J.-M.; Gros, C. P.; Guillard, R., Cobalt(IV) corroles as catalysts for the electroreduction of O₂: reactions of heterobimetallic dyads containing a face-to-face linked Fe(III) or Mn(III) porphyrin. *Journal of Inorganic Biochemistry* **2006**, 100, 858.
 379. Tanaka, M.; Ohkubo, K.; Gros, C. P.; Guillard, R.; Fukuzumi, S., Persistent electron-transfer state of a \square -complex of acridinium ion inserted between porphyrin rings of cofacial bisporphyrins. *Journal of the American Chemical Society* **2006**, 128, 14625.
 380. Szubert-Uryga, A.; Sadowski, Z.; Gros, C. P.; Barbe, J.-M.; Guillard, R., Identification of metalloporphyrins extracted from the copper bearing black shale of fore sudetic monocline (Poland). *Minerals Engineering* **2006**, 19, 1212.
 381. Doukkali, A.; Saoiabi, A.; Ferhat, M.; Mugnier, Y.; Vallat, A.; Guillard, R., Thermodynamic and kinetic

- control over the oxidation mechanism of the natural vanadyl porphyrin series (DPEP)VO in methylene chloride: electrogeneration of an unusual dicationic species [(DPEP)VO]₂²⁺. *New Journal of Chemistry* **2006**, 30, 997.
382. Poulin, J.; Stern, C.; Guillard, R.; Harvey, P. D., Photophysical properties of a rhodium tetraphenylporphyrin-tin corrole dyad. The first example of a through metal-metal bond energy transfer. *Photochemistry and Photobiology* **2006**, 82, 171.
383. Lerouge, F.; Cerveau, G.; Corriu, R. J. P.; Stern, C.; Guillard, R., Self-organization of porphyrin units induced by magnetic field during sol-gel polymerization. *Chemical Communications* **2007**, 1553.
384. Barbe, J.-M.; Canard, G.; Brandès, S.; Guillard, R., Selective chemisorption of carbon monoxide by organic-inorganic hybrid materials incorporating cobalt(III) corroles as sensing components. *Chemistry, a European Journal* **2007**, 2118.
385. Brandès, S.; David, G.; Suspène, C.; Corriu, R. J. P.; Guillard, R., Exceptional affinity of nanostructured organic-inorganic hybrid materials towards dioxygen: confinement effect of copper complexes. *Chemistry, a European Journal* **2007**, 13, 3480.
386. Guest Editor Guillard, R. *Comptes Rendus Chimie - Special issue "Nuclear Energy and Radiochemistry"* **2007**, October-November, 858.
387. Meyer, M.; Burgat, R.; Faure, S.; Batifol, B.; Hubinois, J.-C.; Chollet, H.; Guillard, R., Thermodynamic studies of actinide complexes. 1. A reappraisal of the solution equilibria between plutonium(IV) and ethylenediaminetetraacetic acid (EDTAH₄) in nitric media. *Comptes Rendus de l'Académie des Sciences - Series IIC - Chemistry* **2007**, 10, 929.
388. Harvey, P.; Stern, C.; Gros, C.; Guillard, R., The photophysics and photochemistry of cofacial free base and metallated bisporphyrins held together by covalent architectures. *Coordination Chemistry Reviews* **2007**, 251, 401.
389. Guest Editor Guillard, R. *Dalton Transactions - Web theme issue "Carbon Dioxide at Metal Centres"* **2007**, July.
390. Tanaka, M.; Ohkubo, K.; Gros, C. P.; Guillard, R.; Fukuzumi, S., π -Complex formation between a bisporphyrin and acridinium ion and the photodynamics. *ECS Transactions* **2007**, 2, 167.
391. Gros, C.; Brisach, F.; Meristoudi, A.; Espinosa, E.; Guillard, R.; Harvey, P., Modulation of the singlet-singlet through-space energy transfer rates in cofacial bisporphyrin and porphyrin-corrole dyads. *Inorganic Chemistry* **2007**, 46, 125.
392. Gros, C.; Aly, S. M.; El Ojaimi, M.; Barbe, J.-M.; Brisach, F.; Abd-El-Aziz, A. S.; Guillard, R.; Harvey, P. D., Through space singlet-singlet and triplet-triplet energy transfers in cofacial bisporphyrins held by the carbazol spacer. *Journal of Porphyrins and Phthalocyanines* **2007**, 11, 244.
393. Enakieva, Y. Y.; Gorbunova, Y. G.; Tsvadze, A. Y.; Stern, C.; Guillard, R., Ruthenium(II) meso-tetra-(benzo-15-crown-5)-porphyrinates: synthesis and spectroscopic investigation. *Journal of Porphyrins and Phthalocyanines* **2007**, 11, 883.
394. Cuenot, F.; Meyer, M.; Espinosa, E.; Bucaille, A.; Burgat, R.; Guillard, R.; Marichal-Westrich, C., New Insights into the complexation of lead(II) by 1,4,7,10-tetrakis(carbamoylmethyl)-1,4,7,10-tetraazacyclododecane (DOTAM): structural, thermodynamic and kinetic studies. *European Journal of Inorganic Chemistry* **2008**, 267.
395. Kadish, K. M.; Shen, J.; Frémond, L.; Chen, P.; El Ojaimi, M.; Chkounda, M.; Gros, C. P.; Barbe, J.-M.; Ohkubo, K.; Fukuzumi, S.; Guillard, R., Clarification of the oxidation state of cobalt corroles in heterogeneous and homogeneous catalytic reduction of dioxygen. *Inorganic Chemistry* **2008**, 47, 6726.
396. Shen, J.; El Ojaimi, M.; Chkounda, M.; Gros, C. P.; Barbe, J.-M.; Shao, J.; Guillard, R.; Kadish, K. M., Solvent, anion and structural effects on the redox potentials and UV-visible spectral properties of mononuclear manganese corroles. *Inorganic Chemistry* **2008**, 47, 7717.
397. Aly, S. M.; Ayed, C.; Stern, C.; Guillard, R.; Abd-El-Aziz, A. S.; Harvey, P. D., Triplet energy transfers in electrostatic host-guest assemblies of unsaturated organometallic cluster cations and carboxylate-containing porphyrin pigments. *Inorganic Chemistry* **2008**, 47, 9930.
398. Harvey, P. D.; Stern, C.; Gros, C. P.; Guillard, R., Comments on the through space singlet energy transfers and energy migration (exciton) in the light harvesting systems. *Journal of Inorganic Biochemistry* **2008**, 102, 395.
399. Besson, E.; Mehdi, A.; Chollet, H.; Réyé, C.; Guillard, R.; Corriu, R. J. P., Synthesis and cation-exchange properties of a bis-zwitterionic lamellar hybrid material. *Journal of Materials Chemistry* **2008**, 18, 1193.
400. Siri, O.; Tabard, A.; Pullumbi, P.; Guillard, R., Cobalt complex based on cyclam for reversible binding of nitric oxide. *Molecular Simulation* **2008**, 34, 909.
401. Bessmertnykh, A.; Morkos-Douaihy, C.; Muniappan, S.; Guillard, R., Efficient palladium-catalyzed

- synthesis of aminopyridyl phosphonates from bromopyridines and diethyl phosphite synthesis. *Synthesis* **2008**, 1575.
402. Averin, A. D.; Shukhaev, A. V.; Buryak, A. K.; Denat, F.; Guillard, R.; Beletskaya, I. P., Synthesis of a new family of bi- and polycyclic compounds via Pd-catalyzed amination of 1,7-bis(3-bromobenzyl)cyclen. *Tetrahedron Letters* **2008**, 49, 3950.
403. Marcq, O.; Barbe, J.-M.; Trichet, A.; Guillard, R., Reaction pathways of glucose oxidation by ozone under acidic conditions. *Carbohydrate Research* **2009**, 344, 1303.
404. Beletskaya, I. P.; Tyurin, V. S.; Tsivadze, A. Y.; Guillard, R.; Stern, C., Supramolecular chemistry of metalloporphyrins. *Chemical Reviews* **2009**, 109, 1659.
405. Bessmertnykh, A.; Morkos Douaihy, C.; Guillard, R., Direct synthesis of amino-substituted aromatic phosphonates via palladium-catalyzed coupling of aromatic mono- and dibromides with diethyl phosphite. *Chemistry Letters* **2009**, 38, 738.
406. Takai, A.; Gros, C. P.; Barbe, J.-M.; Guillard, R.; Fukuzumi, S., Enhanced electron-transfer properties of cofacial porphyrin dimers through pi-pi interactions. *Chemistry, a European Journal* **2009**, 15, 3110.
407. Kadish, K. M.; Frémond, L.; Shen, J.; Chen, P.; Ohkubo, K.; Fukuzumi, S.; El Ojaimi, M.; Gros, C. P.; Barbe, J.-M.; Guillard, R., Catalytic activity of biscobalt porphyrin-corrole dyads toward the reduction of dioxygen. *Inorganic Chemistry* **2009**, 48, 2571.
408. Bellows, D.; Aly, S. M.; Gros, C. P.; El Ojaimi, M.; Barbe, J.-M.; Guillard, R.; Harvey, P. D., Energy transfers in monomers, dimers, and trimers of zinc(II) and palladium(II) porphyrins bridged by rigid Pt-containing conjugated organometallic spacers. *Inorganic Chemistry* **2009**, 48, 7613.
409. Averin, A.; Shukhaev, A. V.; Buryak, A. K.; Denat, F.; Guillard, R.; Beletskaya, I. P., Synthesis of 1,3-bis(trimethylcyclam) and 1,3-bis(trimethylcyclen) substituted benzenes. *Macroheterocycles* **2009**, 2, 281.
410. Ranyuk, E.; Douaihy, C. M.; Bessmertnykh, A.; Denat, F.; Averin, A.; Beletskaya, I.; Guillard, R., Diaminoanthraquinone-linked polyazamacrocycles: efficient and simple colorimetric sensor for lead ion in aqueous solution. *Organic Letters* **2009**, 11, 987.
411. Enakieva, Y. Y.; Bessmertnykh, A. G.; Gorbunova, Y. G.; Stern, C.; Rousselin, Y.; Tsivadze, A. Y.; Guillard, R., Synthesis of *meso*-polyphosphorylporphyrins and example of self-assembling. *Organic Letters* **2009**, 11, 3842.
412. Averin, A. D.; Uglov, A. N.; Beletskaya, I. P.; Bessmertnykh, A. G.; Guillard, R., Palladium-catalyzed arylation of polyamines. In *Advances in Chemistry Research*, Nova Science Publishers: 2010; 4, pp 269-296.
413. Filatov, M. A.; Laquai, F.; Fortin, D.; Guillard, R.; Harvey, P. D., Strong donor-acceptor couplings in a special pair-antenna model. *Chemical Communications* **2010**, 46, (48), 9176.
414. Suspène, C.; Brandès, S.; Guillard, R., Reversible coordination of dioxygen by tripodal tetraamine copper complexes incorporated in a porous silica framework. *Chemistry, a European Journal* **2010**, 16, 6352.
415. Besson, E.; Mehdi, A.; Van der Lee, A.; Chollet, H.; Reyé, C.; Guillard, R.; Corriu, R., Selective lanthanides sequestration based on a self-assembled organosilica. *Chemistry, a European Journal* **2010**, 16, (33), 10226.
416. Nguyen, L. V.; Faure, S.; Burgat, R.; Batifol, B.; Chollet, H.; Giachini, L.; Meyer, M.; Guillard, R., Complexation of actinides with organic ligands. *Chocs* **2010**, 92.
417. Rousselin, Y.; Sok, N.; Boschetti, F.; Guillard, R.; Denat, F., Efficient synthesis of new C-functionalized macrocyclic polyamines. *European Journal of Organic Chemistry* **2010**, 1688.
418. Averin, A. D.; Uglov, A. N.; Buryak, A. K.; Bessmertnykh, A. G.; Guillard, R.; Beletskaya, I. P., Synthesis of polyazamacrocycles comprising 6,6'-diamino-2,2'-bipyridine moieties via Pd-catalyzed amination. *Heterocycles* **2010**, 80, 957.
419. Averin, A. D.; Uglov, A. N.; Bessmertnykh, A.; Guillard, R.; Beletskaya, I. P., Palladium-Catalyzed Amination of Dihaloarenes - A Simple and Efficient Approach to Polyazamacrocycles. In *Heterocyclic Compounds: Synthesis, Properties and Applications*, Nylund, K.; Johansson, P., Eds. Nova Science Publishers, **2010**; pp 119-146.
420. Harvey, P. D.; Stern, C.; Gros, C. P.; Guillard, R., Through space singlet energy transfers in the light harvesting systems and cofacial bisporphyrin dyads. *Journal of Porphyrins and Phthalocyanines* **2010**, 14, 55.
421. Filatov, M. A.; Guillard, R.; Harvey, P. D., Selective stepwise Suzuki cross-coupling reaction for the modelling of photosynthetic donor-acceptor systems. *Organic Letters* **2010**, 12, 196.
422. Beletskaya, I. P.; Averin, A. D.; Bessmertnykh, A. G.; Denat, F.; R., G., Palladium-catalyzed amination in the synthesis of polyazamacrocycles. *Russian Journal of Organic Chemistry* **2010**, 46, 947.
423. Camus, J.-M.; Aly, S. M.; Stern, C.; Guillard, R.; Harvey, P. D., Acceleration of the through space S₁

- energy transfer rates in cofacial bisporphyrin bio-inspired models by virtue of substituents effect on the Förster J integral and its implication in the antenna effect in the photosystems. *Chemical Communications (Cambridge, United Kingdom)* **2011**, 47, 8817.
424. Ortiz, G.; Brandès, S.; Rousselin, Y.; Guillard, R., Selective CO₂ adsorption by a triazacyclononane-bridged microporous metal-organic framework. *Chemistry, a European Journal* **2011**, 17, 6689.
425. Ranyuk, E.; Uglov, A.; Meyer, M.; Lemeune, A. B.; Denat, F.; Averin, A.; Beletskaya, I.; Guillard, R., Rational design of aminoanthraquinones for colorimetric detection of heavy metal ions in aqueous solution. *Dalton Transactions* **2011**, 40, 10491.
426. Harvey, P. D.; Stern, C.; Guillard, R., Bio-inspired Molecular Devices Based on Systems Found in Photosynthetic Bacteria. In *Handbook of Porphyrin Science* World Scientific Publishing: Singapore, **2011**; Vol. 11, pp 1-180.
427. Kobelev, S. M.; Averin, A. D.; Buryak, A. K.; Denat, F.; Guillard, R.; Beletskaya, I. P., Synthesis of macrobi- and macrotricyclic compounds comprising pyrimidyl substituted cyclen and cyclam. *Heterocycles* **2011**, 82, 1447.
428. Siri, O.; Tabard, A.; Pullumbi, P.; Guillard, R., Cobalt complex based on cyclam for reversible binding of nitric oxide. In *Industrial Applications of Molecular Simulations*, CRC Press: 2011; pp 261.
429. Chen, P.; El Ojaimi, M.; Gros, C. P.; Richard, P.; Barbe, J.-M.; Guillard, R.; Shen, J.; Kadish, K. M., Electrochemistry and spectroelectrochemistry of bismanganese porphyrin-corrole dyads. *Inorganic Chemistry* **2011**, 50, 3479.
430. Kannappan, R.; Rousselin, Y.; Jabri, R. Z.; Goze, C.; Brandes, S.; Guillard, R.; Zrineh, A.; Denat, F., Synthesis, structure and coordination properties of three cyclam-based ligands bearing one scorpionate arm. *Inorganica Chimica Acta* **2011**, 373, 150.
431. Goulon, J.; Rogalev, A.; Goujon, G.; Wilhelm, F.; Youssef, J. B.; Gros, C.; Barbe, J.-M.; Guillard, R., X-Ray detected magnetic resonance: a unique probe of the precession dynamics of orbital magnetization components. *International Journal of Molecular Sciences* **2011**, 12, 8797.
432. Kadish, K. M.; Chen, P.; Enakieva, Y. Y.; Nefedov, S. E.; Gorbunova, Y. G.; Tsivadze, A. Y.; Bessmertnykh-Lemeune, A.; Stern, C.; Guillard, R., Electrochemical and spectroscopic studies of poly(diethoxyphosphoryl)-porphyrins. *Journal of Electroanalytical Chemistry* **2011**, 656, 61.
433. Chen, P.; El Ojaimi, M.; Gros, C. P.; Barbe, J.-M.; Guillard, R.; Shen, J.; Kadish, K. M., Electrochemistry and spectroelectrochemistry of bismanganese biscalloles dyads. *Journal of Porphyrins and Phthalocyanines* **2011**, 15, 188.
434. Harvey, P. D.; Filatov, M. A.; Guillard, R., Bis- and trisporphyrin bio-inspired models for bacterial antennas and photosystems. *Journal of Porphyrins and Phthalocyanines* **2011**, 15, 1150.
435. Ranyuk, E.; Morkos Douaihy, C.; Bessmertnykh Lemeune, A.; Guillard, R., Preparation, characterization and photophysical properties of hybrid materials from rare earth complexes of phosphonato-substituted DOTAM derivatives. *New Journal of Chemistry* **2011**, 35, 1189.
436. Averin, A.D. ; Kobelev, S.M. ; Anokhin, M.V. ; Bemmertnykh-Lemeune, A.G. ; Guillard, R. ; Belestskaya, I.P., Palladium-catalyzed amination reaction in the synthesis of nitrogen and oxygen-containing macrocycles and macropolycycles. *Targets in Heterocyclic Systems* **2011**, 15, 193.
437. Kobelev, S. M.; Averin, A. D.; Buryak, A. K.; Savelyev, E. N.; Orlinson, B. S.; Butov, G. M.; Novakov, I. A.; Denat, F.; Guillard, R.; Beletskaya, I. P., Macrobicycles based on cyclen and cyclam containing 1,3-disubstituted adamantane moiety. *ARKIVOC* **2012**, 196.
438. Vinogradova, E. V.; Enakieva, Y. Y.; Nefedov, S. E.; Birin, K. P.; Tsivadze, A. Y.; Gorbunova, Y. G.; Lemeune Bessmertnykh, A.; Stern, C.; Guillard, R., Synthesis and self-organization of zinc β -(dialkoxyphosphoryl)porphyrins in the solid state and in solution. *Chemistry, a European Journal* **2012**, 15092.
439. Harvey, P. D.; Langlois, A.; Filatov, M.; Fortin, D.; Ohkubo, K.; Fukuzumi, S.; Guillard, R., Decoupling the artificial special pair to slow down the rate of singlet energy transfer. *Journal of Porphyrins and Phthalocyanines* **2012**, 16, 685.
440. Birin, K. P.; Gorbunova, Y. G.; Tsivadze, A. Y.; Bessmertnykh-Lemeune, A. G.; Guillard, R., Quantum-chemical insight into the reactivity of 5-bromo-10,20-diaryl-porphyrins towards nucleophiles. *Macroheterocycles* **2012**, 5, 338.
441. Kobelev, S. M.; Averin, A. D.; Maloshitskaya, O. A.; Denat, F.; Guillard, R.; Beletskaya, I. P., Planar-chiral macrobicycles comprising cyclam moiety. *Macroheterocycles* **2012**, 5, 389.
442. Fukuzumi, S.; Amasaki, I.; Ohkubo, K.; Gros, C. P.; Guillard, R.; Barbe, J.-M., Photoinduced electron transfer in supramolecular complexes of π -extended viologen with porphyrin monomer and dimer. *RSC Advances* **2012**, 2, 3741.

443. Mitrofanov, A.; Bessmertnykh Lemeune, A.; Stern, C.; Guillard, R.; Gulyukina, N.; Beletskaya, I., Palladium-catalyzed synthesis of mono- and diphosphorylated 1,10-phenanthrolines. *Synthesis* **2012**, 3805.
444. Kobelev, S. M.; Averin, A. D.; Buryak, A. K.; Denat, F.; Guillard, R.; Beletskaya, I. P., Pd-catalyzed amination in the synthesis of cyclen-based macrotricycles. *Tetrahedron Letters* **2012**, 53, 210.
445. Averin, A. D.; Tuytenov, K. S.; Shukaev, A. V.; Kobelev, S. M.; Buryak, A. K.; Denat, F.; Guillard, R.; Beletskaya, I. P., Palladium-catalyzed amination in the synthesis of macrobicycles incorporating cyclen, cyclam and pyridine moieties. *Heterocycles* **2012**, 86, 1341.
446. Beletskaya, I. P.; Tyurin, V. S.; Uglov A.; Stern, C.; Guillard, R. In *Handbook of Porphyrin Science*, World Scientific Publishing: Singapore, **2012**; Vol. 23, pp 81-279.
447. Benachenhou, F.; Mesli, A.; Guillard, R., Synthesis of Schiff bases by aromatic amine condensation with 3,3'-bithiophenes-2,2' and 4,4'-dicarbaldehydes. *Arabian Journal of Chemistry* **2013**, 6, 313.
448. Camus, J.-M.; Langlois, A.; Aly, S. M.; Guillard, R.; Harvey, P. D. Is the special pair structure a good strategy for the kinetics during the last step of the energy transfer with the nearest antenna ? A chemical model approach. *Chemical Communications* **2013**, 49, 2228.
449. Sinelshchikova, A. A.; Nefedov, S. E.; Enakieva, Y. Y.; Gorbunova, Y. G.; Tsivadze, A. Y.; Kadish, K. M.; Chen, P.; Bessmertnykh-Lemeune, A.; Stern, C.; Guillard, R., Unusual Formation of a Stable 2D Copper Porphyrin Network. *Inorganic Chemistry* **2013**, 52, 999.
450. Camus, J.-M.; Aly, S. M.; Fortin, D.; Guillard, R.; Harvey, P. D., Design of triads for probing the direct through space energy transfers in closely spaced assemblies. *Inorganic Chemistry* **2013**, 52, 8360.
451. Camus, J.-M.; Langlois, A.; Aly, S. M.; Guillard, R.; Harvey, P. D., Evidence for reverse pathways and equilibrium in singlet energy transfers between an artificial special pair and an antenna. *Journal of Porphyrins and Phthalocyanines* **2013**, 17, 722.
452. Fang, Y.; Kadish, K. M.; Chen, P.; Gorbunova, Y.; Enakieva, Y.; Tsivadze, A.; Bessmertnykh-Lemeune, A.; Guillard, R., Electrochemical and spectroelectrochemical studies of β -phosphorylated Zn porphyrins. *Journal of Porphyrins and Phthalocyanines* **2013**, 17, 1035.
453. Camus, J.-M.; Harvey, P. D.; Guillard, R., Syntheses of bioinspired trisporphyrin scaffoldings from stepwise Suzuki coupling strategies. *Macroheterocycles* **2013**, 13, 13.
454. Uglov, A. N.; Averin, A. D.; Buryak, A. K.; Bessmertnykh, A.; Guillard, R.; Beletskaya, I. P., Palladium-catalyzed amination in the synthesis of macrocycles comprising two naphthalene and two polyamine moieties. *Macroheterocycles* **2013**, 6, 33.
455. Ermakova, E.; Michalak, J.; Meyer, M.; Arslanov, V.; Tsivadze, A. Y.; Guillard, R.; Bessmertnykh-Lemeune, A., Colorimetric Hg^{2+} sensing in water: from molecules toward low-cost solid devices. *Organic Letters* **2013**, 15, 662.
456. Uvarova, M. A.; Sinelshchikova, A. A.; Golubnichaya, M. A.; Nefedov, S. E.; Enakieva, Y. Y.; Gorbunova, Y. G.; Tsivadze, A. Y.; Stern, C.; Bessmertnykh-Lemeune, A. G.; Guillard, R., Supramolecular assembly of organophosphonate diesters using paddle-wheel complexes: first examples in porphyrin series. *Crystal Growth and Design* **2014**, 14 (11), 5976.
457. Zubatyuk, R.; Sinelshchikova, A. A.; Enakieva, Y. Y.; Gorbunova, Y. G.; Tsivadze, A. Y.; Nefedov, S. E.; Bessmertnykh-Lemeune, A. G.; Guillard, R.; Shishkin, O., Insights into crystal packing of phosphorylporphyrins based on topology on intermolecular interaction energies. *CrystEngComm* **2014**, 16, 10428.
458. Mitrofanov, A.; Manowong, M.; Rousselin, Y.; Brandès, S.; Guillard, R.; Bessmertnykh-Lemeune, A. G.; Chen, P.; Kadish, K. M.; Goulioukina, N.; Beletskaya, I., Structural and electrochemical studies of copper(I) complexes with diethoxyphosphoryl-1,10-phenanthrolines. *European Journal of Inorganic Chemistry* **2014**, 3370.
459. Michalak, J.; Birin, K. P.; Muniappan, S.; Ranyuk, E.; Enakieva, Y. Y.; Gorbunova, Y. G.; Stern, C.; Bessmertnykh-Lemeune, A. G.; Guillard, R., Synthesis of porphyrin-bis(polyazamacrocycle) triads via Suzuki coupling reaction. *Journal of Porphyrins and Phthalocyanines* **2014**, 18 (1/02), 35.
460. Averin, A. D.; Shukhaev, A. V.; Vovk, A. I.; Kukhar, V. P.; Denat, F.; Guillard, R.; Beletskaya, I. P., Pd-catalyzed amination for the synthesis of macropolycycles comprising cyclen, cyclam and naphthalene moieties. *Macroheterocycles* **2014**, 7 (2), 174.
461. Bessmertnykh-Lemeune, A. G.; Stern, C.; Gorbunova, Y. G.; Tsivadze, A. Y.; Guillard, R., Survey of synthetic routes towards phosphorus substituted porphyrins. *Macroheterocycles* **2014**, 7 (2), 122.
462. Ranyuk, E.; Ermakova, E. V.; Bovigny, L.; Meyer, M.; Bessmertnykh-Lemeune, A. G.; Guillard, R.; Rousselin, Y.; Tsivadze, A. Y.; Arslanov, V. V., Towards sensory Langmuir monolayers consisting of macrocyclic pentaaminoanthraquinone. *New Journal of Chemistry* **2014**, 38 (1), 317.
463. Uglov, A. N.; Bessmertnykh-Lemeune, A. G.; Guillard, R.; Averin, A. D.; Beletskaya, I. P., Optical

- detection of heavy metal ions. *Russian Chemical Reviews* **2014**, 73 (3), 196.
464. Stern, C.; Bessmertnykh-Lemeune, A. G.; Gorbunova, Y. G.; Tsivadze, A. Y.; Guillard, R., Effect of the anchoring group in porphyrin sensitizers: phosphonate versus carboxylate linkages. *Turkish Journal of Chemistry* **2014**, 38, 980.
465. Arslanov, V.; Ermakova, E.; Michalak, J.; Bessmertnykh-Lemeune, A.; Meyer, M.; Raitman, O.; Vysotskij, V.; Guillard, R.; Tsivadze, A., Design and evaluation of sensory systems based on amphiphilic anthraquinones molecular receptors. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* **2015**, 483, 193.
466. Birin, K. P.; Gorbunova, Y. G.; Tsivadze, A. Y.; Bessmertnykh-Lemeune, A. G.; Guillard, R., Insights into the synthesis and the solution behavior of meso-aryloxy- and alkoxy-substituted porphyrins. *European Journal of Organic Chemistry* **2015**, (25), 5610.
467. Kobelev, S. M.; Averin, A. D.; Buryak, A. K.; Vovk, A. I.; Kukhar, V. P.; Denat, F.; Guillard, R.; Beletskaya, I. P., Macrobicyclic and macrotricyclic derivatives of N,N',N'',N'''-tetrasubstituted cyclen and cyclam. *Heterocycles* **2015**, 90 (2), 989.
468. Fang, Y.; Chen, P.; Jiang, X.; Manowong, M.; Kadish, K. M.; Gorbunova Yulia, G.; Sinelshikova, A. A.; Enakieva, Y. Y.; Martynov, A. G.; Tsivadze, A. Y.; Gorbunova, Y. G.; Tsivadze, A. Y.; Bessmertnykh-Lemeune, A. G.; Stern, C.; Guillard, R., Electrochemical and spectroelectrochemical studies of diphosphorylated metalloporphyrins. Generation of a phlorin anion product. *Inorganic Chemistry* **2015**, 54 (7), 3501.
469. Bessmertnykh-Lemeune, A. G.; Mitrofanov, A.; Rousselin, Y.; Stern, C.; Guillard, R.; Enakieva, Y. Y.; Gorbunova, Y. G.; Nefedov, S., Supramolecular architectures based on phosphonic acid diesters. *Phosphorus, Sulfur and Silicon and the Related Elements* **2015**, 190 (5-6), 831.
470. Makukhin, N. N.; Goulioukina, N. S.; Bessmertnykh-Lemeune, A. G.; Brandès, S.; Guillard, R.; Beletskaya, I. P., Exploiting palladium-catalyzed cross-coupling for the synthesis of 2-aryl-substituted 1-aminocyclopropylphosphonates. *Synthesis* **2015**, 47 (2), 279.
471. Ermakova, E.; Raitman, O.; Shokurov, A.; Kalinina, M.; Selector, S.; Tsivadze, A.; Arslanov, V.; Meyer, M.; Bessmertnykh-Lemeune, A.; Guillard, R., A metal-responsive interdigitated bilayer for selective quantification of mercury(II) traces by surface plasmon resonance. *Analyst* **2016**, 141, 1912.
472. Enakieva, Y. Y.; Michalak, J.; Abdulaeva, I. A.; Volostnykh, M. V.; Stern, C.; Guillard, R.; Bessmertnykh-Lemeune, A.; Gorbunova, Y. G.; Tsivadze, A. Y.; Kadish, K. M., General and scalable approach to A₂B- and A₂BC-type porphyrin phosphonate diesters. *European Journal of Organic Chemistry* **2016**, 4881.
473. Abdulaeva, I. A.; Birin, K. P.; Michalak, J.; Romieu, A.; Stern, C.; Bessmertnykh-Lemeune, A.; Guillard, R.; Gorbunova, Y. G.; Tsivadze, A. Y., On the synthesis of functionalized porphyrins and porphyrin conjugates via beta-aminoporphyrins. *New Journal of Chemistry* **2016**, 40, 5758.
474. Bessmertnykh Lemeune, A.; Mitrofanov, A. Y.; Rousselin, Y.; Guillard, R.; Brandès, S.; Uvarova, M. A.; Nefedov, S., Copper(II) complexes with phosphorylated 1,10-phenanthrolines: from molecules to infinite supramolecular arrays. *New Journal of Chemistry* **2016**, 40, 5896.
475. Bessmertnykh-Lemeune, A. G.; Guillard, R.; Stern, C.; Enakieva, Y. Y.; Gorbunova, Y. G.; Tsivadze, A. Y.; Nefedov, S. E., Biomimetic studies of porphyrin self-assembled systems In *Supramolecular Systems: Chemistry, Types and Applications*, Pena, C., Ed. **2016**; p Chapter 4.
476. Guillard, R.; Erker, G.; Raithby, P.; Xu, Q., The diversity of coordination chemistry - A special issue in honor of Prof. Pierre Braunstein. *Coordination Chemical Reviews* **2017**, 350, 1.
477. Langlois, A.; Camus, J.-M.; Karsenti, P.-L.; Guillard, R.; Harvey, P. D., Metal dependence on the bidirectionality and reversibility of the singlet energy transfer in artificial special pair-containing dyads. *Inorganic Chemistry* **2017**, 56, 2506.
478. Enakieva, Y. Y.; Volostnykh, M. V.; Nefedov, S. E.; Kirakosyan, G. A.; Gorbunova, Y. G.; Tsivadze, A. Y.; Bessmertnykh, A.; Stern, C.; Guillard, R., Gallium(III) and indium(III) complexes with meso-monophosphorylated porphyrins: synthesis and structure. A first example of dimers formed by self-assembly of meso-porphyrinyl-phosphonic acid monoester. *Inorganic Chemistry* **2017**, 56, 3055.
479. Guillard, R.; Erker, G.; Raithby, P.; Xu, Q., The diversity of coordination chemistry - A special issue in honor of Prof. Pierre Braunstein. *Coordination Chemical Reviews Part II* **2018**, 355, 1-404.
480. Habermeyer, B.; Guillard, R., Some activities of Porphychem illustrated by the applications of porphyrinoïds in PDT, PIT and PDI. *Photochem.Photobio.Sci.* **2018**, 17, 1675. DOI:10.1039/c8pp00222c.
481. Fang, Y.; Jiang, X.; Kadish, K.M.; Nefedov, S.E.; Kirakosyan, G. A.; Enakieva, Y.Y.; Gorbunova, Y. G.; Tsivadze, A.Y.; Stern, C.; Bessmertnykh-Lemeune, A.; Guillard, R. Electrochemical, spectroelectrochemical, and structural studies of mono- and diphosphorylated zinc porphyrins and their self-assemblies. *Inorganic Chemistry* **2019**, 58, 4665-4678.
482. Schlachter, A.; Fleury, A.; Tanner, K.; Soldera, A.; Habermeyer, B.; Guillard, R.; Harvey Pierre, D. The

TDDFT excitation energies of the BODIPYs; The DFT and TDDFT challenge continues *Molecules* **2021**, *26*, 1781-1715.

483. Habermeyer, B.; Chilingaryan, T.; Guilard, R. Bactericidal efficiency of porphyrin systems *J. Porphyrins Phthalocyanines* **2021**, *25*, 359-381. DOI:10.1142/S1088424621500358.
484. Toussaint, S., Ponstein, J., Thoury, M., Métivier, R., Kalthoff, D., Habermeyer, B., Guilard, R., Bock, S., Mortensen, P., Sandberg, S., Gueriau, P., Amson, E. Fur glowing under ultraviolet: in situ analysis of porphyrin accumulation in the skin appendages of mammals, *Integrative Zoology*, **2023**, *18*, 15-26, DOI/10.1111/1749-4877.12655
485. Chilingarian, T.; Schlachter, A.; Frochot, C.; Habermeyer, B.; Harvey, P.D.; Guilard, R. Assessment of photosensitization performance and stability of host-guest MCM-41 composites from the direct observation of singlet oxygen formation and properties. *J. Porphyrins Phthalocyanines* **2023**, *27*, 517-525. DOI: 10.1142/S108842462350030X
486. Osterloh, W.R.; Chilingarian, T.; Habermeyer, B.; Frochot, C.; Arnoux, P.; Guilard, R.; Kadish, K.M. Electrochemistry of tri-N-methylpyridyl porphyrins *J. Porphyrins Phthalocyanines* **2023**, *27*, 1465-1474, DOI: 10.1142/S1088424683501158.
487. Kadish, K.M.; Guilard, R. Naturally occurring porphyrins: The colored molecules of life. *J. Porphyrins Phthalocyanines* **2024**, *28*, 571-583. DOI: 10.1142/S1088424624300064
488. Guilard, R. A survey on (azido)-, (triazolato)- and (tetrazolato) metal (III or IV) porphyrin complexes. *J. Porphyrins Phthalocyanines* **2025**, *29*, 583-594. DOI: 10.1142/S1088424625300071
489. Polacchi, L., Lutet-Toti, C., Basuyaux, O., Gueriau, P., Albéric, M., Pasco, H., Thomas, J., Merle, D., Habermeyer, B., Guilard, R., Thoury, M., & Marin, F. Coupling gel electrophoresis with photoluminescence reveals biochrome complexes in modern and fossil shells. *Methods in Ecology and Evolution* **2025**, *16*, 2807–2818. <https://doi.org/10.1111/2041-210X.70176>

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Patents

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Patents

Applicant: Air Liquide®

- (1) N°: **FR 2 643 370 ou FR 89/02315 (22/02/1989)**
Title: *Dérivés polyazotés et leurs complexes métalliques utilisables pour la fixation de l'oxygène*
Inventors: Boisselier-Cocolios, B.; Guilard, R.; Jean, C.; Taurin, L.
PCT Number (date of entry): **WO 90/09987 (22/02/1990)**

- (2) N°: **FR 2 654 102 ou FR 89/14719 (09/11/1989)**
Title: *Procédé de synthèse de dérivés polyazotés cycliques*
Inventors: Guilard, R.; Meunier, I.; Jean, C.; Boisselier-Cocolios, B.
EP Number (date of entry): **EP 0427595 (31/10/1990)**

- (3) N°: **FR 2 725 449 ou FR 94/11892 (05/10/1994)**
Title: *Dérivés de polyazacycloalcanes, leurs complexes métalliques et produits pharmaceutiques incorporant ces complexes*
Inventors: Cocolios, P.; Guilard, R.; Gros, C.
PCT Number (date of entry): **WO 96/11189 (05/10/1995)**

- (4) N°: **FR 2 762 992 ou FR 97/05674 (07/05/1997)**
Title: *Transporteur de NO à base de complexes polyazamacrocycles de fer et de cobalt*
Inventors: Tabard, A.; Siri, O.; Cocolios, P.; Guilard, R.
PCT Number (date of entry): **WO 98/50394 (28/04/1998)**

- (5) N°: **FR 2 789 380 ou FR 99/01499 (09/02/1999)**
Title: *Procédé d'épuration du peroxyde d'hydrogène utilisant un support minéral modifié*
Inventors: Guilard, R.; Denat, F.; Pernelet, O.; Tripier, R.; Ledon, H.; Devos, C.

- (6) N°: **FR 2 791 968 ou FR 99/04458 (09/04/1999)**
Title: *Procédé sur site de production de peroxyde d'hydrogène ultra-pur pour l'industrie électronique mettant en oeuvre des complexes organométalliques*
Inventors: Ledon, H.; Guilard, R.; Tabard, A.; Royal, G.; Broecker, G.

- (7) N°: **FR 2 828 197 ou FR 01/10317 (01/08/2001)**
Title: *Nouveaux matériaux à base de dérivés de corrole pour le piégeage du monoxyde de carbone*
Inventors: Jérôme, F.; Dubois, G.; Brandès, S.; Canard, G.; Barbe, J.-M.; Guillard, R.; Roux-Fouillet, B.; Ledon, H.
PCT Number (date of entry): **WO 03/011865 (19/07/2002)**
- (8) N°: **FR 2 774 093 ou FR 98/00785 (26/01/1998)**
Title: *Nouveau gel de silice incorporant des motifs polyazacycloalcanes, procédé de préparation et utilisation*
Inventors: Corriu, R.; Reyé, C.; Mehdi, A.; Dubois, G.; Chuit, C.; Denat, F.; Roux-Fouillet, B.; Guillard, R.; Lagrange, G.; Brandès, S.
PCT Number (date of entry): **WO 99/37656 (25/01/1999)**
- (9) N°: **FR 2 789 986 ou FR 99/02290 (24/02/1999)**
Title: *Procédé de production sur site de peroxyde d'hydrogène ultra pur pour l'industrie électronique*
Inventors: Ledon, H.; Guillard, R.; Tabard, A.; Royal, G.; Broeker, G.
US Number (date of entry): **US 6,274,114 (16/06/1999)**
- (10) N°: **FR 2 796 645 ou FR 99/09587 (23/07/1999)**
Title: *Nouveau gel de silice incorporant des motifs polyazacycloalcanes comportant plus de six atomes d'azote, procédé de préparation et utilisation*
Inventors: Denat, F.; Dubois, G.; Tripier, R.; Guillard, R.; Roux-Fouillet, B.
EP Number (date of entry): **EP 1 070 722 (22/06/2000)**
- (11) N°: **FR 2 802 928 ou FR 99/16252 (22/12/1999)**
Title: *Motifs polyazacycloalcanes N-substitués et greffés sur une matrice solide. Applications à l'extraction de métaux lourds*
N° (division): **FR 2 804 104 ou FR 01/02159 (16/02/2001)**
Title: *Polyazacycloalcanes éventuellement greffés sur une matrice solide, complexes organométalliques les incorporant comme ligands. Utilisation desdits composés à l'extraction de métaux lourds*
Inventors: Guillard, R.; Roux-Fouillet, B.; Lagrange, G.; Meyer, M.; Bucaille, A.
PCT Number (date of entry): **WO 01/46202 (12/12/2000)**
- (12) N°: **FR 2 810 035 ou FR 00/07501 (13/06/2000)**
Title: *Procédé de préparation de tétraazamacrocycles et nouveaux composés*
Inventors: Tripier, R.; Denat, F.; Guillard, R.; Ledon, H.

(13) N°: **FR 03/50217 (13/06/2003)**

Title: *Procédés de préparation du cis-8B-méthyl-décahydro-2A,4A,6A,8A-tétraazacyclopenta(fg)acénaphylène, du cis-décahydro-2A,4A,6A,8A-tétraazacyclopenta(fg)acénaphylène, du cyclène, et de cyclènes fonctionnalisés*

Inventors: Boschetti, F.; Chaux, F.; Denat, F.; Guillard, R.; Ledon, H.

PCT Number (date of entry): **WO 2005/000823 (04/06/2004)**

Applicant: CEA

(14) N°: **FR 2 725 552 ou FR 94/11903 (05/10/1994)**

Title: *Procédé de décontamination partielle alpha d'un effluent aqueux*

Inventors: Guillard, R.; Chollet, H.; Guiberteau, P.; Guerin, M.

PCT Number (date of entry): **WO 96/11478 (04/10/1995)**

(15) N°: **FR 05/50304 (02/02/2005)**

Title: *Utilisation de pinces moléculaires comme matériaux sensibles dans des capteurs chimiques pour la détection ou le dosage de composés organiques à l'état de vapeurs*

Inventors: Hairault, L.; Montmeat, P.; Pasquinet, E.; Barbe, J.-M.; Brandès, S.; Denat, F.; Gros, C.; Guillard, R.

PCT Number (date of entry): **WO 2006/082343 (01/02/2006)**

Applicants: CEA/Air Liquide

(16) N°: **FR 2 725 382 ou FR 94/11904 (05/10/1994)**

Title: *Polyazacycloalcanes, complexes tri-, tétra- ou pentaazamacrocycliques, procédé de fabrication de ces polyazacycloalcanes substitués ou non et greffés sur un support et utilisations des polyazacycloalcanes*

Inventors: Guillard, R.; Chollet, H.; Guiberteau, P.; Cocolios, P.

PCT Number (date of entry): **WO 96/11056 (04/10/1995)**

(17) N°: **FR 2 774 092 ou FR 98/00784 (26/01/1998)**

Title: *Procédé de préparation de polyazacycloalcanes greffés sur gel de silice et utilisation des composés greffés*

Inventors: Mehdi, A.; Denat, F.; Barbette, F.; Guillard, R.; Lagrange, G.

PCT Number (date of entry): **WO 99/37399 (22/01/1999)**

(18) N°: **FR 2 830 253 ou FR 01/12550 (28/09/2001)**

Title: *Nouveau procédé de préparation de macrocycles azotés C-fonctionnalisés et nouveaux intermédiaires obtenus*

Inventors: Boschetti, F.; Denat, F.; Guillard, R.; Ledon, H.; Chollet, H.; Babouhot, J.-L.

PCT Number (date of entry): **WO 03/029228 (27/09/2002)**

Applicant: CNRS

(19) N°: **FR 2 822 470 ou FR 01/03802 (21/03/2001)**

Title: *Procédé de préparation de matériaux hybrides organiques-inorganiques, mésoporeux. Nouveaux matériaux et leur utilisation pour séparer les gaz.*

Inventors: Corriu, R.; Reyé, C.; Thieuleux, C.; R.; Mehdi, A.; Ledon, H.; Guillard, R.; Brandès, S.

PCT Number (date of entry): **WO 02/076991 (21/03/2002)**

(20) N°: **FR 08/51306 ou FR 2 928 144 (28/02/2008)**

Title: *Matériaux pour l'extraction solide/liquide de cations de métaux lourds à base de polyazacycloalcanes N-fonctionnalisés supportés.*

Inventors: Meyer, M.; Bucaille, A.; Cuenot, F.; Denat, F.; Boschetti, F.; Guillard, R.

PCT Number (date of entry): **WO 2009/112736 (20/02/2009)**

Applicants: CEA/CNRS

(21) N°: **FR 2 797 786 ou FR 99/10861 (27/08/1999)**

Title: *Procédé et installation d'élimination des cations métalliques d'un liquide par des résines de polyazacycloalcanes greffés sur un support*

Inventors: Chollet, H.; Babouhot, J.-L.; Barbette, F.; Guillard, R.

PCT Number (date of entry): **WO 01/15806 (25/08/2000)**

Applicant: PorphyChem®

(22) N°: **FR 3 025 198 ou FR 14/58126 (29/08/2014)**

Title: *Chlorines absorbant dans l'infra-rouge*

Inventors: Habermeyer, B.; Guillard, R.; Barbe, J.-M.

Applicant: LARS®

(23) N°: **FR 3 013 584 ou FR 13/61522 (22/11/2013)**

Title: *Resorbable biomimetic prosthetic ligand*

Inventors: Brulez, B.; Migonney, V.; Guillard, R.

PCT Number (date of entry) : **WO 2015/075397 (21/11/2014)**

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Lectures

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Lectures

A - INTERNATIONAL CONFERENCES

1. Polarographie des halogénothiophènes substitués.
(R. GUILARD, M. PERSON et P. FOURNARI)
IIIrd Symposium on Organic Sulphur, Caen, 1968.
2. "Une nouvelle série métallocénique" : les dérivés du thienchrotrène.
(R. GUILARD et J. TIROUFLET).
IIIrd Symposium on Organic Sulphur, Caen, 1968.
3. Synthèses de thiophénotropones et de sels de thiophénotropylium.
(R. GUILARD, M. PERSON et P. FOURNARI)
IIIrd Symposium on Organic Sulphur, Caen, 1968.
4. Synthèses en série cycloheptatriénothiophénique.
(R. GUILARD et P. FOURNARI).
Congrès International de Chimie Hétérocyclique, Montpellier, 1969.
5. Condensation de dérivés thiophéniques et de Cr(CO)₆.
IV Symposium on Organic Sulphur, Venise 1970.
(R. GUILARD, P. FOURNARI et J. TIROUFLET).
6. Aspect singulier des structures métallocéniques en série cycloheptathiophénique.
(R. GUILARD et P. FOURNARI).
V Symposium on Organic Sulphur, Lund, 1972.
7. Condensation of cyclanic ketones on thiophenic dialdehydes.
(R. GUILARD et P. FOURNARI).
V Symposium on Organic Sulphur, Lund, 1972.
8. Complex formation of benz[b]thiophen-1, 1-dioxide with iron carbonyl.
(R. GUILARD et P. FOURNARI).
VI symposium on Organic Sulphur, Bangor, 1974.
9. Synthesis and study of some metalloporphyrins.
(R. GUILARD et P. FOURNARI).
V International Congress of Heterocyclic Chemistry, Ljubjana, Yougoslavia, 1975.
10. Synthesis, molecular stereochemistry and properties of peroxotitanium IV porphyrin complexes.
(R. GUILARD, D. RIPOLL, C. LECOMTE, J. PROTAS, J.M. LATOUR et J.C. MARCHON).
VII International Conference on Coordination Chemistry, Hambourg, Germany, 1976.
11. Synthesis, reactivity and structure of niobioporphyrins.
(C. LECOMTE, J. PROTAS, B. FLINIAUX, R. GUILARD et P. FOURNARI)
VII International Conference on Coordination Chemistry, Hambourg, Germany, 1976.
12. Structure of alkyl indium(III) porphyrins and related sulphinate and sulphonate derivatives,
XIX International Conference on Coordination Chemistry.
(C. LECOMTE, J. PROTAS, P. COCOLIOS et R. GUILARD).
XIX International Conference on Coordination Chemistry, Prague, Tchechoslovaquia, september 1978.

13. Reactions of some alkyl and aryl indium(III) porphyrins with sulphur dioxide and molecular oxygen.
(P. COCOLIOS, R. GUILARD, P. FOURNARI, C. LECOMTE et J. PROTAS)
XIX International Conference on Coordination Chemistry, Prague, Tcheoslovaquia, september 1978.
14. Preparation of low oxidation state niobium porphyrinates.
(R. GUILARD, J. M. BARBE et E. LAVIRON).
IXth International Conference on Organometallic Chemistry, Dijon, France, september 1979.
15. Influence of molecular interactions and cis-trans ligands effects on the structure of some metalloporphyrins.
(P.V. HUONG, R. CAVAGNAT, P. COCOLIOS et R. GUILARD).
IXth International Conference on Organometallic Chemistry, Dijon, France, september 1979.
16. Photochemical generation of Titanium(II) porphyrin intermediates, XXI International Conference on Coordination Chemistry, Toulouse, France, july 1980.
(C.J. BOREHAM, J.M. LATOUR, J.C. MARCHON, B. BOISSELIER-COCOLIOS et R. GUILARD).
17. Metalloporphyrins with metal-halogen bonds : new synthetic route, X-ray structure, chemical and physical properties.
(P. RICHARD, J.M. BARBE, E. LAVIRON, R. GUILARD, C. LECOMTE et J. PROTAS)
XXI International Conference on Coordination Chemistry, Toulouse, France, july 1980.
18. Interference and multiple scattering effects in porphyrinic complexes.
(J. GOULON, P. FRIANT, J.L. PONCET, R. GUILARD, J. FISCHER et L. RICARD).
International Conference on EXAS/XANES, Frascati, Italy, september 1982.
19. Photostability and Emission Characteristics of In-octaethylporphyrin and In-tetraphenylporphyrin.
(E.M. EBEID, S.E. MORSI, M.A. EL BORAI et R. GUILARD)
Alexandrie, Egypt, january 1983.
20. EXAFS spectroscopy of selenometalloporphyrins : (A) comparison of oxo, thio and selenovanadium(IV) porphyrins. (B) Study of a selenocarbonyl complex of iron(II) porphyrins.
(J. GOULON, C. GOULON-GINET, P. FRIANT, J.L. PONCET, R. GUILARD, J.P. BATTIONI et D. MANSUY)
4th International Conf. on Organic Chem. of Se and Te, Birmingham, Grande Bretagne, july 1983.
21. Structural characterization by X-ray absorption spectroscopy (EXAFS/XANES) of the vanadium chemical environment in various asphaltenes, Symposium International sur la Caractérisation des Huiles Lourdes et des Résidus Pétroliers, 1984.
(J. GOULON, C. ESSELIN, P. FRIANT, C. BERTHE, J.F. MULLER, J.L. PONCET, R. GUILARD, J.C. ESCALIER et B. NEFF).
22. Recent developments in metalloporphyrins chemistry.
Séminaire, Laboratoire du Professeur K.M. Kadish, Université de Houston, Texas, USA, september 1984.
(R. GUILARD).
23. X-ray Excited Optical Luminescence (XEOL) : Potentiality and Limitations for the Detection of XANES/EXAFS Excitation Spectra.
(J. GOULON, P. TOLA, J.C. BROCHON, M. LEMONNIER, J. DEXPERT-GHIS et R. GUILARD).
3th International Conference on EXAFS, Stanford, USA, july 1984.
24. Electrochemical studies of metal-metal σ bonded (P)In-Mo(CO)₃Cp porphyrins.
(P. COCOLIOS, O. VITTORI, C. MOISE, R. GUILARD et K.M. KADISH).
23rd International Conference on Coordination Chemistry, University of Colorado, Boulder, Colorado, USA, august 1984.

25. Electrochemistry and spectroelectrochemistry of five coordinate σ -bonded iron-aryl porphyrins. Interactions with pyridine and nitric oxide.
(K.M. KADISH, D. LANCON, P. COCOLIOS et R. GUILARD).
23th International Conference on Coordination Chemistry, University of Colorado, Boulder, Colorado, USA, august 1984.
26. Metal-metal σ -bonded metalloporphyrins : synthesis and physical properties.
(R. GUILARD).
Séminaire, Laboratoire du professeur J.P. COLLMAN, Université de Stanford, Californie, USA, september 1984.
27. Metalloporphyrins in Organometallic Chemistry.
(R. GUILARD).
Conférence plénière au 5th Fechem Conférence on Organometallic Chemistry, Cap d'Agde, France, october 1984.
28. Metalloporphyrins in Organometallic Chemistry.
(R. GUILARD).
Anorganisch Chemischen Kolloquium (Invitation du Professeur J.W. BUCHLER), Darmstadt, Germany, november 1984.
29. Comportement électrochimique de porphyrines du vanadium(IV) dichlorées.
(P. REEB, Y. MUGNIER et R. GUILARD).
Journées d'Electrochimie, Florence, Italy, may 1985.
30. Synthesis and Characterization of Heteropolymetallic Porphyrin Complexes.
(J.M. BARBE, J. GOULON et R. GUILARD).
XXIV International Conference on Coordination Chemistry, Athènes, Greece, august 1986.
31. Electrochemistry and ligand addition of five- and six coordinated gallium(III) porphyrins.
(J.L. CORNILLON, A. COUTSOLELOS, R. GUILARD et K.M. KADISH)
XXIV International Conference on Coordination Chemistry, Athenes, Grèce, août 1986.
32. Control of spin state in (porphyrinato)iron(III) derivatives. Characterization of high, low, and variable spin state five coordinate σ -bonded aryl (or perfluoroaryl)- and alkyl iron(III) complexes.
(C. RATTI, A. TABARD et R. GUILARD)
XI International Symposium on Macrocyclic Chemistry, Florence, Italy, september 1986.
33. Thorium hydroxyporphyrins.
(A. DORMOND, R. GUILARD, P. CHARPIN, B. BELKALEM, G. CHEVRIER, M. LANCEL, M. NIERLICH et M. VIGNER).
2^e Congrès International sur les Lanthanides et les Actinides, Lisbonne, Portugal, 1987.
34. Structural distortions of vanadyl chlorins and porphyrins deposited on hydrodemetallisation catalyst surfaces.
(M.LOOS, I.ASCONE, P.FRIANT, J.GOULON, N.SENGLLET, J.M. BARBE, R. GUILARD et D.FAURE)
International Conference XAFS-V, Seattle (U.S.A.), August 1988.
35. XAS studies of some molecular conductors: Partially oxidized nickel phthalocyanines.
(M.LOOS, P.FRIANT, J.M. BARBE et R. GUILARD)
International Conference XAFS-V, Seattle (U.S.A.), August 1988.
36. Synthesis and characterization of a new series of titanium(IV) metalloporphyrins coordinated to a disulfur or a diselenium ligand.
(C. RATTI, P. RICHARD, A. TABARD et R. GUILARD)
XXVI I.C.C.C., Porto, Portugal, 28 august - 2 september 1988.
37. Reactivity of azidometalloporphyrins : synthesis and characterization of a new series of iron(III) porphyrins coordinated to an imino axial ligand.
(A. TABARD et R. GUILARD)
SAMBAS II, Le Bischenberg, France, 6-8 october 1988.

38. Dihydrogen Complexes of Metalloporphyrins : Characterization and Reactivity.
(J.P. COLLMAN, P.S. WAGENKNECHT, J.E. HUTCHISON, R.T. HEMBRE, N.S. LEWIS, M.A. LOPEZ et R. GUILARD).
199th ACS National Meeting, Boston, USA, 22-27 april 1990.
39. The synthesis and Characterization of the First Bridging Dinitrogen Complex of a Metallo-Cofacial Diporphyrin.
(J.P. COLLMAN, J.E. HUTCHISON, M.A. LOPEZ, R. GUILARD, R.A. REED et T.G. SPIRO).
199th ACS National Meeting, Boston, USA, 22-27 april 1990.
40. Crystal structural of a heterodinuclear cofacial bis-porphyrin.
(P. RICHARD, M.A. LOPEZ, R. GUILARD, C. LECOMTE, J. HUTCHISON et J.P. COLLMAN).
XVth I.U.Cr., Bordeaux, France, 1990.
41. Etude des propriétés structurales et électroniques de complexes macrocycliques du fer à liaison σ métal-carbone.
(R. GUILARD).
Université Mohammed V, Rabat, Morocco, December 1990.
42. Metal-metal interactions in metalloporphyrins : synthesis of complexes for use as precursors of new materials.
(R. GUILARD).
Université de Pise, Italy, May 1991.
43. Some aspects of electrochemical and structural properties of binuclear metalloporphyrins.
(R. GUILARD).
Conférence plénière au 3rd International Seminar on Analytical Chemistry, Changchun, Chine, October 1991.
44. Some aspects of spectroscopic and electrochemical characteristics of alkyl- and aryl-, iron(III) porphyrins correlations between stereochemistry, spin state, and electrochemical data.
(R. GUILARD).
Conférence plénière au 4th Beijing Conference and Exhibition in Instrumental Analysis (BCEIA), Beijing, October 1991.
45. Structure et réactivité de porphyrines d'étain(II).
(J.M. BARBE, P. RICHARD, S. KOELLER et R. GUILARD)
III^e Congrès National de la Société Marocaine de Chimie, Fès, Maroc, Janvier 1992.
46. Study of the metal-metal interaction in bi- and polymetallic porphyrins by electrochemistry NMR and ESR.
(R. GUILARD)
Plenary lecture at the "Second Asian Conference on Analytical Chemistry", Changchun, Chine, August 1993
47. Synthèse de ligands homo et hétérobimacrocycliques dans les séries des porphyrines et du cyclame.
(R. GUILARD)
Conférence plénière à la Première Rencontre Nationale sur la Chimie Hétérocyclique, Rabat, Morocco, December 1993.
48. "Synthesis and Characterization of New Alkylated Porphycenes".
Tetrapyrrole Group Meeting, Primary College, London, July 1994.
(A. AUKAULOO et R. GUILARD).
49. Electrochemical Study of Cobalt-Complexes (LCo) and (LCo)₂O₂. Development of an Electrochemical Dioxide Generator.
(C. GRANIER et R. GUILARD).
Conférence plénière au "Changchun International Symposium on Analytical Chemistry", Changchun, China, August 1994.

50. Intérêt de la RMN lors de l'étude de dérivés modèles de systèmes enzymatiques.
(R. GUILARD)
Plenary lecture at the "1^{ères} Journées de Perspectives en RMN et IRM", Mohammedia, Morocco, April 1995.
51. Bioinorganic Models of Cytochrome c Oxidase. Synthesis and Study of Cofacial Metallodimacrocycles.
(R. GUILARD)
Plenary lecture at the "10th Symposium on Biofunctional Chemistry", Kyoto, Japan, May 1995.
53. Initial stage reactivity of gadolinium(III) with N-tetraacetate (propionate)-substituted-tetraazamacrocycles. Comparison of MM/DFT results to experimental data.
(P. PULLUMBI, C. GROS, R. GUILARD et V. GUERRA).
6th International Conference on the "Applications of the Density Functionnal Theory in Chemistry and Physics", Paris, France, September 1995.
54. Lanthanide polyazapolyacetic (polypropionic) acid complexes : Structure-reactivity prediction by using Molecular Electrostatic Potentials to study the initial stages of complex formation.
(P. PULLUMBI, C. GROS et R. GUILARD).
Symposium für Theoretische Chemie, Hanovre, Germany, October 1995.
55. Stereoelectronic and H-bond control of reactivity in cellulose model compounds towards electrophiles ; An experimental and theoretical study of α and β anomers of D-glucose, methyl D-glucopyranoside and cellobiose ozonolysis.
(P. PULLUMBI, S. LEMEUNE, J.-M. BARBE, R. GUILARD, A. TRICHET et J. LIGNERES).
Fourth World Congress of Theretically Oriented Chemists, WATOC'96, Jerusalem, Israel, July 1996
56. Structure stabilities and molecular properties of cis- and trans- bis chloro-(1,4,8,11-tetraazacyclotetradecane) cobalt(III) and iron(III) cations : an experimental and theoretical study".
(P. PULLUMBI, O. SIRI et R. GUILARD).
Fourth World Congress of Theretically Oriented Chemists, WATOC'96, Jerusalem, Israel, July 1996
57. XAFS Studies of High-Valent Porphyrinato Manganese Complexes with Ozone.
(V. GOTTE, J. GOULON, A. ROGALEV, C. GOULON-GINET, K. PERIE, J.-M. BARBE, R. GUILARD et P. COCOLIOS).
XAFS IX, Grenoble, France, August 1996.
58. A new method for characterization of silica-gel bound tetraazamacrocycles by ESR spectroscopy. Application of these materials for decontamination of radioactive liquid wastes.
(F. DENAT, F. RABIET, C. GROS, H. CHOLLET et R. GUILARD).
XIth International Symposium on Organosilicon Chemistry, Montpellier, France, September 1996.
59. Metal-carbon Bonded Metalloporphyrins and Metalloporphycenes : Synthesis and Physical Properties.
(R. GUILARD)
Plenary lecture at the "2nd International Symposium on Organometallic Chemistry" (OMCC-II), Fuzhou (China), october 1996.
60. "Use of macrocycle complexes for transportation and activation of oxygen", Université de Sarrebrück, Germany, april 1997.

61. Reactivity and Electrochemical Studies of Iron(IV) Sigma Bonded Porphyrins $[P]Fe(R)]^{n+}$
Where P is the Dianion of a Porphyrin, $n = 1, 2, 3$ and $R = C_6H_5, C_6F_3H_2, C_6F_4H$ or C_6F_5 .
(R. GUILARD et A. TABARD)
Plenary lecture at the BCEIA'97 "The Seventh International Beijing Conference and Exhibition on Instrumental Analysis", Shanghai, China, october 1997.
62. Cis and Trans-(1,4,8,11-tetraazacyclotetradecane) Dichloro Iron(III) and Manganese(III).
Cis-Trans Isomerization Evidenced by Infrared and Electrochemical Studies.
Plenary lecture at the 6th ISEC, Changchun, Chine, october 1997.
(R. GUILARD).
63. La radioactivité naturelle des phosphates marocains : description d'un procédé applicable à la décontamination des effluents des unités de production d'acide phosphorique.
Les 1^{ères} Journées Scientifiques sur les Phosphates, Casablanca, Morocco, april 1998.
(R. GUILARD).
64. Reactivity and electrochemical studies of σ -bonded iron-alkyl (or aryl) porphyrin (Models of cytochrome P 450). (Lausanne, Switzerland, september 1998).
(R. GUILARD).
65. "Interactions métal-métal en série porphyrinique. Modèles de cytochrome c oxydase"
(Lausanne, Switzerland, september 1998).
(R. GUILARD).
66. Synthesis, spectroscopic and electrochemical studies of sandwich complexes in porphyrin and phthalocyanines series. (Neuchatel, Switzerland, september 1998).
(R. GUILARD).
67. Use of grafted Macrocycles in the Treatment of α - contaminated Liquid Wastes (Bern, Switzerland, september 1998).
(R. GUILARD).
68. Synthesis of new materials used for decontamination of radioactive liquid wastes (Bale, Switzerland, september 1998).
(R. GUILARD).
69. Use of Biomimetic Complexes for Transportation and Activation of Dioxygen.
18th European Colloquium on Heterocyclic Chemistry, Rouen, France, october 1998
(J.M. BARBE et R. GUILARD).
70. Use of grafted Macrocycles in the Treatment of $\alpha\beta$ -contaminated Liquid Wastes, European Research Conferences, San Feliu de Guixols, Spain, september 1998.
(R. GUILARD).
71. "Interactions métal-métal en série porphyrinique. Modèles de cytochrome c oxydase" 1^{ère}
Rencontre de Chimie Organométallique, Fes, Morocco, april 2000
(R. GUILARD).
72. Synthesis and structural studies of metal-metal derivatives in corrole series.
222nd ACS Fall National Meeting, 4th JOM Symposium, Chicago, Illinois, USA, August 2001.
(R. GUILARD).
73. Synthesis and characterization of linked « face-to-face » biscorroles.
8th ISEC, Changchun, october 2001.
(R. GUILARD).
74. Spectroscopic and electrochemical studies of metal-metal bonded derivatives in corroles series.
9th BCEIA, Beijing, Chine, october 2001.
(R. GUILARD).
75. Apport de la chimie macrocyclique à l'élaboration de procédés de dépollution. Université de Sherbrooke, Canada, october 2001.
(R. GUILARD).

76. Apport de la chimie macrocyclique à l'élaboration de procédés de dépollution.
Université de Laval, Canada, october 2001.
(R. GUILARD).
77. Synthèses, études spectroscopiques et électrochimiques de complexes "sandwich" constitués de porphyrines ou (et) de phtalocyanines.
Université de Montréal, Canada, october 2001.
(R. GUILARD).
78. Synthèse et caractérisation de dérivés à liaisons métal-métal dans la série des corroles.
Premier Colloque Francophone sur les Métaux Moléculaires, Rabat, Morocco, may 2002.
(R. GUILARD).
79. New developments in corrole chemistry. A special emphasis on face-to-face bismacrocycles.
Plenary lecture at the ICPP-2, Kyoto, Japan, july 2002.
(R. GUILARD)
80. Metal-metal interactions in macrocycle series.
(R. GUILARD)
CREST Symposium, Osaka University, Osaka, Japan, july 2002.
81. Use of biomimetic complexes for the activation of dioxygen.
(R. GUILARD)
Kumamoto University, Kumamoto, Japan, july 2002.
82. Nouveaux développements dans la chimie des corroles.
(R. GUILARD)
RENACOM, Agadir, Morocco, 2-3 may 2003.
83. Synthesis and physicochemical properties of face-to-face bismacrocycle in corrole chemistry.
(R. GUILARD)
Plenary lecture at the ICPC-IX, Suzdal', Russia, 8-12 septembre 2003.
84. A new type of catalyst for the electroreduction of oxygen.
(R. GUILARD)
9th ISEC, Changchun, China, 10-12 october 2003.
85. Physicochemical properties and X-ray structural characterization of copper corroles and porphyrin dyads
(R. GUILARD)
BCEIA, Beijing, China, 13-16 october 2003.
86. Apport de la chimie macrocyclique à l'élaboration de procédés de dépollution.
(R. GUILARD)
CNESTEN, Morocco, june 2004.
87. Metallocorroles as sensing components for CO
(R. GUILARD)
Symposium, ICPP-3, New Orleans, 11-16 july 2004.
88. New development in corrole chemistry.
(R. GUILARD)
University of Florida, Gainesville, USA, 14 february 2005.
89. From the synthesis of macrocycles to the elaboration of nanomaterials.
(R. GUILARD)
University of Florida, Gainesville, USA, 15 february 2005.
90. De la chimie macrocyclique à l'élaboration des nanomatériaux.
(R. GUILARD)
RENACOM, Marrakech, Morocco, 5-7 may 2005.
91. De la chimie macrocyclique à l'élaboration des nanomatériaux.
(R. GUILARD)
Université de Sherbrooke, Canada, 13 may2005.

92. From macrocyclic chemistry towards the elaboration of depollution processes.
(R. GUILARD)
International Conference « Physical-Chemical Foundations of High Technologies of XXIst Century » dedicated to the 60th Anniversary of the Institute of Physical Chemistry (IPC), Russian Academy of Sciences (RAS), Moscou, Russie, 30 may-4 june 2005.
93. New developments in corrole chemistry: a special emphasis on the reactivity of metallocorroles towards gases.
(R. GUILARD)
232nd ACS Fall National Meeting, San Francisco, Californie, USA, 8-13 september 2006.
94. Confinement de complexes du cuivre au sein de matériaux nanostructurés hybrides organique-inorganique : vers une affinité exceptionnelle vis-à-vis des gaz
(R. GUILARD)
RENACOM, Meknes, Morocco, 3-4 may 2007.
95. New developments in corrole and porphyrin chemistry. Special emphasis on the reactivity of face-to-face bismacrocycles.
(R. GUILARD)
Seminar at the University of Kyoto (on invitation of Prof. Atsushiro OSUKA), Japan, 16 february 2008.
96. New developments in corrole chemistry: a special emphasis on the reactivity of metallocorroles towards gases.
(R. GUILARD)
Seminar at the University of Ritsumeikan (on invitation of Prof. Hitoshi TAMIAKI), Japan, 18 february 2008.
97. New developments in corrole chemistry: a special emphasis on the reactivity of metallocorroles towards gases.
(R. GUILARD)
Seminar at the University of Osaka (on invitation of Prof. Shunichi FUKUZUMI et Takashi HAYASHI), Japan, 19 february 2008.
98. From the synthesis of macrocycles to the elaboration of nanomaterials.
(R. GUILARD)
Seminar at the University of Osaka (on invitation of Prof. Hiroshi TSUKUBE), Japan, 20 february 2008.
99. New developments in corrole and porphyrin chemistry. Special emphasis on the reactivity of face-to-face bismacrocycles.
(R. GUILARD)
Seminar at the University of Kobe (on invitation of Prof. Jun-ichiro SETSUNE), Japan, 21 february 2008.
100. Exceptional affinity of nanostructured organic-inorganic hybrid materials towards gases due to the confinement of copper complexes.
(R. GUILARD)
Seminar at the University of Hiroshima (on invitation of Prof. Yohsuke YAMAMOTO), Japan, 22 february 2008.
101. New developments in corrole and porphyrin chemistry. Special emphasis on the reactivity of face-to-face bismacrocycles.
(R. GUILARD)
Seminar at the University of Ehime (on invitation of Prof. Noboru ONO), Japan, 25 february 2008.

102. New developments in corrole chemistry: a special emphasis on the reactivity of metallocorroles towards gases.
(R. GUILARD)
Seminar at the University of Kyusyu (on invitation of Prof. Hiroyuki FURUTA et Yoshio HISAEDA), Japan, 26 february 2008.
103. New developments in corrole chemistry: a special emphasis on the reactivity of metallocorroles towards gases.
(R. GUILARD)
Seminar at the University of Kyusyu (on invitation of Prof. Yoshinori NARUTA), Japan, 27 february 2008.
104. New developments in corrole chemistry: a special emphasis on the reactivity of metallocorroles towards gases.
(R. GUILARD)
Seminar at the University of Tohoku (on invitation of Prof. Nagao KOBAYASHI), Japan, 29 february 2008.
105. New developments in corrole chemistry: a special emphasis on the reactivity of metallocorroles towards gases.
(R. GUILARD)
Seminar at the University of Toho (on invitation of Prof. Mikio NAKAMURA), Japan, 3 march 2008.
106. New developments in corrole and porphyrin chemistry. Special emphasis on the reactivity of face-to-face bismacrocycles.
(R. GUILARD)
Seminar at the University of University of Chiba (on invitation of Prof. Saburo NEYA), Japan, 4 march 2008.
107. Versatile chemical and spectroscopic properties of face to face dyads according to their geometry
(R. GUILARD)
Symposium, ICPP-5, Moscou, 6-11 july 2008.
108. Some contributions on bio-inspired systems.
International Conference on Porphyrins and Phthalocyanines (ICPP-6), New Mexico, USA, july 2010
(R. GUILARD)
109. Studies of biomimetic metalloporphyrin models.
International Conférence « Topical Problems of Organometallic and Coordination Chemistry », Nizhny Novgorod, Russia, september 2010.
(R. GUILARD)
110. Elaboration de nouveaux matériaux pour la capture de O₂ et CO₂
Renacom, Errachidia, Morocco, april 2011.
(R. GUILARD)
111. Elaboration of new materials for the capture of O₂ and CO₂
Mendeleev Congress, Volgograd, Russia, september 2011.
(R. GUILARD)
112. Bio-inspired Molecular Models based on Natural Systems.
Zhengzhou Chemistry Workshop VII, Zhengzhou, China, september 2013.
(R. GUILARD)
113. Effect of the anchoring group in porphyrin sensitizers: phosphonate versus carboxate linkages.
ICPP-8, Istanbul, Turquie, june 2014.
(R. GUILARD)
114. Some routes towards A₂B, A₂B₂ and A₂BC-type porphyrins, French Chinese Workshop, Nanjing, July 2016
(R. GUILARD)

B – NATIONAL CONFERENCES

1. Comportement polarographique de monohalogénothiophènes substitués.
(M. PERSON, P. FOURNARI, R. GUILARD et M. MARONNIER).
Comm. Bull. Soc. Chim., 1966, p. 2709.
2. Synthèse d'iodoaldéhydes thiophéniques ; détermination des structures par spectroscopie de RMN.
(R. GUILARD et P. FOURNARI).
Comm. Bull. Soc. Chim., 1967, p. 750.
3. Produits de condensation de dialdéhydes thiophéniques et de composés du type $A \text{ CHCOCH}_2A'$.
(R. GUILARD et P. FOURNARI).
Comm. Bull. Soc. Chim., 1967, p. 3592.
4. Synthèse et étude de thiophènes condensés.
(Ph. MEUNIER, R. GUILARD et P. FOURNARI).
Comm. Bull. Soc. Chim., 1970, Bull. 14b, p. 13.
5. Complexation des cyclohepta[b] et [c]thiophènes par le chrome hexacarbonyle.
(R. GUILARD, P. FOURNARI et J. TIROUFLET)).
Comm. Bull. Soc. Chim., 1971, Bull. 13b, p. 83.
6. Structure cristalline des (x H-cyclohepta[b] et [c]thiophènes) chrome tricarbonyle.
(R. GUILARD, Y. DUSAUSOY et J. PROTAS).
Comm. Bull. Soc. Chim., 1971, Bull. 13b, p. 84.
7. Sur l'étude par voie chimique du mécanisme de condensation de cycloheptathiophènes et du chrome hexacarbonyle.
(B. HANQUET, R. GUILARD et P. FOURNARI)
Comm. Bull. Soc. Chim., 197, Bull. 15b, p. 18.
8. Synthèse et étude d'homocyclohepta[b] et [c]thiophénones.
(B. HANQUET et R. GUILARD)
Colloque RCP 138, Pau, octobre 1972.
9. Etablissement de structures en série cycloheptafurannique.
(M. EL BORAI et R. GUILARD).
Actualité Chimique, 1974, 4, p. 77.
10. Etude de l'action de TiCl_4 et NbCl_5 sur les porphyrines.
(B. FLINIAUX, R. GUILARD et P. FOURNARI)
Société Chimique de France, section DIJON-BESANCON, 1975.
11. De quelques problèmes structuraux en série thiophéno-homotroponique.
(B. HANQUET R. GUILARD et P. FOURNARI)
Actualité Chimique, 1976, 6, 41.
12. Porphyrines coordonnées à l'indium : une nouvelle série de métalloporphyrines présentant une liaison métal-carbone.
(P. COCOLIOS et R. GUILARD).
Actualité Chimique, 1977, 3, 65.
13. Problèmes posés en spectrométrie de masse dans l'étude des métalloporphyrines.
(D. RIPOLL, P. COCOLIOS, R. GUILARD et B. MAUME).
IV^{èmes} Journées d'information et d'applications pratiques sur la spectrométrie de masse couplée à la chromatographie en phase gazeuse, january 1977.
14. Porphyrines de l'indium à liaisons métal-carbone et métal-soufre : synthèses et propriétés,
Colloque RCP 280 "Chimie et Biochimie des Porphyrines", VILLEURBANNE, february 1977.
15. Etude structurale en série métalloporphyrinique : porphyrines coordonnées au niobium et à l'indium.
(D. RIPOLL, P. COCOLIOS et R. GUILARD)
Colloque RCP 280 "Chimie et Biochimie des Porphyrines", VILLEURBANNE, february 1977.

16. Sur une méthode générale de synthèse de péroxométalloporphyrines.
(D. RIPOLL, R. GUILARD et P. FOURNARI)
Actualité Chimique, 1978, 1, 65.
17. Structure et réactivité de porphyrines coordonnées au niobium et au vanadium.
(C. LECOMTE, P. RICHARD, J.M. BARBE, R. GUILARD et J. PROTAS)
Colloque RCP 519 "Structure et réactivité des métalloporphyrines", Strasbourg, may 1980.
18. Synthèses et caractéristiques de ferriporphyrines à liaisons σ métal-carbone. Interaction avec les molécules légères.
(P. COCOLIOS, G. LAGRANGE et R. GUILARD).
CONCOORD XIII, Saint Agnan, september 1982.
19. Pétroporphyrines : synthèse et étude physicochimique de molécules modèles, Journées sur l'environnement chimique du vanadium et du nickel dans les produits pétroliers, Centre de Recherche ELF, SOLAIZE, november 1982.
(R. GUILARD).
20. Pétroporphyrines : synthèse et étude physicochimique de molécules modèles.
(J.L. PONCET et R. GUILARD)
Société Chimique de France, section Dijon-Besancon, december 1982.
21. Synthèse dans la série des porphyrines du gallium ; leur intérêt dans la préparation de matériaux conducteurs à chaînes linéaires.
(A. COUTSOLELOS et R. GUILARD)
Société Chimique de France, section Dijon-Besancon, december 1982.
22. Synthèse et étude structurale de complexes hétérométalliques en série porphyrinique.
(C. LECOMTE, J.M. BARBE, R. GUILARD et R. GERARDIN).
Réunion RCP 519 "Activation de l'oxygène et transferts d'électrons par les métalloenzymes et leurs complexes modèles", Paris, june 1983.
23. Interactions du monoxyde d'azote et de complexes ferriporphyriniques à liaison σ fer-carbone, Réunion RCP 519 "Activation de l'oxygène et transferts d'électrons", Paris, june 1983.
(R. GUILARD).
24. Synthèse et étude de matériaux conducteurs à base de métallomacrocycles (porphyrines-phthalocyanines).
(J.M. BARBE, A. COUTSOLELOS et R. GUILARD)
Concoord XIV, Evieux, october 1983.
25. Propriétés magnétiques des alkyl(aryl)ferriporphyrines à liaison σ métal-carbone.
(A. TABARD et R. GUILARD).
Société Chimique de France, section Dijon-Besancon, december 1983.
26. Propriétés magnétiques des ferriporphyrines liaison σ métal-carbone.
(A. TABARD et R. GUILARD).
Colloque RCP 519 "Activation de l'oxygène et transfert d'électrons par les métalloenzymes et leurs complexes modèles", Strasbourg, may 1984.
27. Sur les complexes métalloporphyriniques à liaison métal-métal et métal-carbone.
(R. GUILARD).
Laboratoire de Spectrochimie des Eléments de Transition, Université de Paris-Sud, march 1985.
28. Sur les complexes métalloporphyriniques à liaisons métal-carbone et métal-métal.
(R. GUILARD).
Séminaire du groupe ELF BIO-RECHERCHES, Toulouse, January 1986.
29. Interactions et liaisons métal-métal en séries métalloporphyriniques.
(R. GUILARD).
C.E.N.G. Grenoble, november 1986.
30. Interactions et liaisons métal-métal en séries métalloporphyriniques.
(R. GUILARD).
Université des Sciences et Techniques du Languedoc, Montpellier, march 1987.

31. Premier exemple de réaction organique sur le ligand axial en série métalloporphyrinique : structure cristalline de la 4-phényl tetrazolato indium(III) 2,3,7,8,12,13,17,18-octaethyl porphyrine (oep[In(N₄C)Ph]).
(P. RICHARD, R. GUILARD, S.S. GERGES, A. TABARD et C. LECOMTE).
Association Française de Cristallographie, Réunion Annuelle de Nancy, june 1987.
32. Cristallographie de complexes métalloporphyriniques à liaison métal-métal de type σ ou donneur-accepteur.
(A. HABBOU, C. LECOMTE, M. BOUKHRIS, P. RICHARD, P. MITAINE et R. GUILARD).
Association Française de Cristallographie, Réunion Annuelle de Nancy, june 1987.
33. Etude électrochimique de (P)Ge(R)₂ et (P)Ge(R)(X) dans le benzonitrile (avec P = TPP ou OEP ; R = CH₃, C₆H₅, CH₂C₆H₅ et X = OH⁻, Cl⁻ ou ClO₄⁻).
(J.M. BARBE, Q.Y. XU, Z. WANG, R. GUILARD et K.M. KADISH)
Journées d'Electrochimie, Dijon, june 1987.
34. Influence de la Trans-Coordination de Ligands sur des Métalloporphyrines à Liaison σ Métal-Carbone. Etude Structurale, Electrochimique et Spectroscopique de Complexes (OEP)Ir(C₃H₅)₂(L).
(J.L. CORNILLON, P. MITAINE, P.-F. BLANCHET, R. GUILARD et K.M. KADISH).
Journées d'Electrochimie, Dijon, june 1987.
35. Etude par résonance paramagnétique électronique de la stabilité des fuels, séminaire du CRES, SOLAIZE, december 1987.
(R. GUILARD).
36. Sur l'intérêt des azides en synthèse hétérocyclique, Université de Mont Saint Aignan, february 1988.
(R. GUILARD)
37. Sur les complexes métalloporphyriniques à liaisons métal-métal.
GECOM XVII, Nantes, april 1989.
(R. GUILARD).
38. Modélisation d'enzymes. Synthèse et caractérisation de complexes à liaisons fer-azote et de dérivés hétéronucléaires Fe-Cu en série porphyrinique.
Réunion du Réseau "Métalloprotéines et Modèles", Marseille, 17-18 december 1990.
(A. TABARD et R. GUILARD).
39. Interactions métal-métal dans les métalloporphyrines. Synthèse de complexes utilisés comme précurseurs de nouveaux matériaux.
Université des Sciences et Techniques du Languedoc, Montpellier, june 1991.
(R. GUILARD).
40. Complexes hétérodimétalliques à base de "Pacman" porphyrines.
4ème Congrès de la Société Française de Chimie, Strasbourg, september 1991.
(R. GUILARD, M.A. LOPEZ, S. BRANDES, A. TABARD, P. RICHARD, C. LECOMTE et J.P. COLLMAN).
41. Interactions métal-métal en séries métalloporphyriniques : activation de petites molécules.
Université de Marseille, Centre Saint Jérôme, Marseille, february 1992.
(R. GUILARD).
42. Chimie de Coordination et Gaz Industriels.
Journées "Chimie de Coordination et Catalyse" de la Société Française de Chimie, Villeurbanne, november 1993.
(R. GUILARD).
43. L'intérêt de la RPE comme technique d'analyse des produits pétroliers.
Journée "Résonance Paramagnétique Electronique" organisée par la Société ELF ATOCHEM, Saint Avold, november 1993.
(R. GUILARD).

44. Transport et activation du dioxygène.
Université de Rouen, june 1994.
(R. GUILARD).
45. Chimie de coordination et gaz industriels.
Congrès de la Société Française de Chimie, Villeurbanne, september 1994.
(R. GUILARD).
46. L'apport de la chimie de coordination à la maîtrise d'un gaz industriel.
Université de Rennes I, december 1994.
(R. GUILARD).
47. Chimie en série tétraazamacrocyclique : synthèse de séquestrants des actinides et des lanthanides.
Université de Montpellier, june 1995.
(R. GUILARD).
48. Chimie de coordination et gaz industriels.
Université de Toulouse, september 1995.
(R. GUILARD).
49. Synthèse et mise en oeuvre de ligands tétraazotés pour l'élimination de métaux présents dans les effluents aqueux, Université de Rennes, september 1995.
(R. GUILARD).
50. Apport de la chimie de coordination à la maîtrise des gaz industriels.
Journées de l'Union des Physiciens, Université de Bourgogne, Dijon, october 1995.
(R. GUILARD).
51. Synthèse de séquestrants tétraazamacrocycliques d'actinides et de lanthanides.
Institut de Chimie de la Matière Condensée à Bordeaux, january 1996.
(R. GUILARD).
52. Synthèse de séquestrants tétraazamacrocycliques d'actinides et de lanthanides.
Université Louis Pasteur à Strasbourg, february 1996.
(R. GUILARD).
53. Synthèse de séquestrants tétraazamacrocycliques d'actinides et de lanthanides.
Université de Nice (Sophia Antipolis), march 1996.
(R. GUILARD).
54. Synthèse de séquestrants tétraazamacrocycliques d'actinides et de lanthanides.
CENG Grenoble, november 1996.
(R. GUILARD).
55. Synthèse et mise en oeuvre de ligands tétraazotés pour l'élimination de métaux présents dans les effluents aqueux, CENG Grenoble, april 1997.
(R. GUILARD).
56. Apport de la chimie de coordination à la maîtrise des gaz industriels, Université J. Fourier, Grenoble, january 1998.
(R. GUILARD).
57. La chimie de coordination au service de la maîtrise des gaz industriels.
CONCOORD-GECOM 98, Noirmoutiers, may 1998.
58. Reactivity and electrochemical studies of π -bonded iron-alkyl porphyrin (model of cytochrome P 450), Bordeaux, october 2000.
(R. GUILARD).
59. Apport de la chimie macrocyclique à l'élaboration de procédés de dépollution.
Collège de France, Paris, february 2001.
(R. GUILARD).
60. Synthèse et réactivité de dérivés bimacrocycliques face à face de type biscoorle et porphyrine-corrole, Grenoble, november 2001.
(R. GUILARD).

61. Apport de la chimie macrocyclique à l'élaboration de procédés de dépollution.
Université Henri Poincaré, Nancy 1, march 2002.
(R. GUILARD).
62. De la synthèse de précurseurs tetraazamacrocycliques à l'élaboration de nanomatériaux
(R. GUILARD)
Institut de Science et d'Ingénierie Supramoléculaires (ISIS), Strasbourg, march 2004.
63. De la synthèse de précurseurs macrocycliques à l'élaboration de nanomatériaux.
(R. GUILARD)
Journée Scientifique « Jacques DUBAC », Université Paul Sabatier, Toulouse, december 2004.
64. De la chimie macrocyclique à la mise au point de techniques de purification et de détection des gaz.
(R. GUILARD)
Université Paul Sabatier, Toulouse, 16 december 2005.
65. De la mise au point d'un procédé d'ultrapurification des effluents contaminés α vers la séquestration sélective des actinides et des lanthanides.
(R. GUILARD)
6^{èmes} Journées Scientifiques de Marcoule, Grande Motte, 15-19 may 2006.
66. Elaboration de nouveaux matériaux pour la capture de l'oxygène et du dioxyde de carbone.
(R. GUILARD)
Journée Scientifique à l'Université de Rennes, France, June 2011.
67. La cristallographie support de la chimie bio-inspirée.
(R. GUILARD)
Journée Scientifique en Hommage au Pr Claude Lecomte à l'Université de Nancy I, Avril 2013.
68. De la chimie biomimétique vers les matériaux innovants.
(R. GUILARD)
Colloque de l'Académie des Sciences, Paris, Octobre 2013.
69. Les biomatériaux : l'apport de la chimie aux sportifs de haut niveau.
(R. GUILARD)
Les Olympiades de la Chimie, Paris, Janvier 2014.
70. Elaboration de nouveaux matériaux pour la capture de CO₂.
(R. GUILARD)
Conférence à l'IFPEN à Solaize, Février 2014

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Direction of Works

ROGER GUILARD

PROFESSOR OF CHEMISTRY AT UNIVERSITÉ BOURGOGNE EUROPE

Direction of Works

Diplômes d'Etudes Supérieures

- 1) J. DUCRUIT Synthèses d'iodothiophènes substitués (1966)
- 2) F. JACQUET Synthèse et étude polarographique d'halogénothiophènes substitués (1966)
- 3) R. FAUVE Synthèse et étude physicochimique en série thienchrotrénique (1967)
- 4) A. RAGAIN Synthèse et étude physicochimique de thiophénotropolones et tropones (1967)

Thèses de Troisième Cycle

- 5) J.C. NONCIAUX Synthèse et étude physicochimique de dithiénopyridazines et de leurs N-oxydes (1973)
- 6) B. HANQUET Synthèses en séries cycloheptathiophénique (1974)
- 7) B. FLINIAUX Synthèse et étude de métalloporphyrines (1975)
- 8) D. RIPOLL Synthèse et étude de métalloporphyrines modèles susceptibles d'intervenir dans l'activation de l'oxygène moléculaire (1977)
- 9) P. COCOLIOS Synthèse et réactivité de nouvelles séries de métalloporphyrines : indio porphyrines à liaisons métal-soufre et métal-carbone (1978)
- 10) J.P. BOUKOU-POBA Synthèses et études en série aryl-2 pyrrolique (1979)
- 11) B. BOISSELIER-COCOLIOS Activation photochimique et électrochimique de molécules légères par les métalloporphyrines (1982)
- 12) P. RICHARD Synthèse, réactivité et étude physicochimique de complexes porphyriniques du niobium (1983)
- 13) M. BROST Sur l'intérêt de la fonction azide pour la synthèse d'hétérocycles azotés orthocondensés à un cycle thiophénique (1983)
- 14) J.L. PONCET Synthèse et étude physicochimique de porphyrines du vanadium(IV) et vanadium(II) : leur intérêt dans la récupération assistée du pétrole (1983)
- 15) G. LAGRANGE Etude sur la réactivité des ferroporphyrines à liaison σ fer-carbone (1984)
- 16) A. TABARD Synthèse, études spectroscopique et magnétique de complexes ferriporphyriniques à liaison σ fer-carbone (1985)
- 17) J.M. BARBE Synthèses et études physicochimiques en séries porphyriniques de l'étain, du germanium et du silicium. Elaboration de matériaux polymériques (1985)

Thèses de Doctorats d'Etat

- 18) M. EL BORAI Synthèse d'arénotropones et d'arénotropilidènes et étude de leur complexation à un métal carbonyle (1976)
- 19) P. TA KIM Synthèses et études en série indolique et pyrannindolique (1980)
- 20) P. COCOLIOS Synthèses, caractéristiques physicochimiques et réactivité d'indio et ferriporphyrines à liaisons σ métal-carbone (1982)
- 21) B. HANQUET Synthèse, étude structurale et réactivité de systèmes thiophénohomotropiques (1984)
- 22) J.C. CAILLE Sur les applications de la réaction de Shapiro en série iridoïde (1984)

- 23) A. COUTSOLELOS Synthèse et études physicochimiques en série galloporphyrinique. Elaboration de matériaux polymériques à base de galloporphyrines (1985)
- 24) B. TABYAOUI Synthèse dans la série des cyclopenténoïdes (1987)
- 25) A. SAOIABI Identification des éléments métalliques vanadium et nickel présents dans les matières organiques extraites des schistes de Timahdit et Tarfaya. Elaboration et caractérisation de dérivés modèles (1988)
- 26) A. ZRINEH Synthèse de complexes métalloporphyriniques à liaisons thallium-carbone et thallium-métal
- 27) F. BENACHENHOU Synthèses, études physicochimiques et électrochimiques des molécules dérivant du thiophène et du bithiényl, composés à visée thérapeutique (1990)
- 28) M. FAHIM Synthèse et caractérisation de complexes métalloporphyriniques et métalloporphycéniques à liaison métal-métal Sn-M (M=Fe, Re) et In-M (M=Co, Re) (1995)
- 29) M. LACHKAR Contribution à l'étude de complexes bimacrocycliques en série « Pacman » porphyrine et tétraazacyclotétradécane. Elaboration de nouveaux complexants macrotricycliques en série tétracyclotétradécane (1996)

Thèses de l'Université de Bourgogne

- 30) P. MITAINE Liaisons métal-métal en séries métalloporphyriniques : synthèse, études spectroscopique et électrochimique (1987)
- 31) N. SENGLLET Sur les complexes de vanadyle et de nickel présents dans les huiles lourdes. Synthèse de dérivés modèles pour l'étude de la microhétérogénéité des fractions lourdes des pétroles (1988)
- 32) T. AUBERT Réactivité d'iminophosphoranes vis à vis de composés dicarbonylés. Intérêt pour la synthèse de divers hétérocycles azotés (1988)
- 33) C. RATTI Synthèse et étude physicochimique de porphyrines du titane, de l'étain et du fer. Complexes de bas degré d'oxydation à liaisons σ métal-carbone et métal-chalcogène (1988)
- 34) A. ROSSIGNOL Contribution à l'étude structurale des lipoprotéines humaines par spectroscopie de résonance magnétique (1989)
- 35) N. JAGEROVIC Réactivité de complexes azido en série métalloporphyrinique. Synthèse et études spectroscopiques (1990)
- 36) M.A. LOPEZ Synthèse et caractérisation de complexes hétérobimétalliques à base de « Pacman » porphyrines (1990)
- 37) I. MEUNIER Elaboration et caractérisation de nouveaux tétraazamacrocycles. Leur mise en œuvre dans le transport du dioxygène (1991)
- 38) C. JEAN Synthèses et études physico-chimiques de complexes du cobalt(II). Réactivité vis à vis du dioxygène (1991)
- 39) S. KOELLER Synthèse et caractérisation physicochimique de complexes hétérobimacrocycliques à base de porphyrines et cyclame (1993)
- 40) A. IBNLFASSI Synthèse et caractérisation physicochimique de complexes sandwich à base de porphyrines et de phthalocyanines (1993)
- 41) S. BRANDES Synthèse et caractérisation physicochimique de complexes homo- et hétérobimétalliques en série cyclame et Pacman porphyrine. Réactivité vis à vis du dioxygène (1993)
- 42) H. CHOLLET Utilisation de macrocycles tétraazotés pour la complexation des actinides en milieu aqueux. Validation pour le retraitement des effluents liquides aqueux (1994)

- 43) C. GRANIER Transport du dioxygène de l'air par des complexes de cobalt (1994)
- 44) A. AUKAULOO Nouveaux analogues porphyriniques : synthèse et étude physicochimique de complexes métalloporphyriniques (1994)
- 45) C. GROS Elaboration de nouveaux complexants en série tétraazamacrocyclique : leur intérêt en imagerie médicale et dans l'épuration des gaz (1995)
- 46) S. LEMEUNE Action de l'ozone sur des modèles de cellulose et sur les colorants et azurants optiques présents dans les papiers recyclés (1996)
- 47) K. PERIE Interaction de l'ozone avec des complexes métalloporphyriniques. Leur intérêt dans la catalyse des réactions d'ozonation (1996)
- 48) B. ANDRIOLETTI Modélisation du cytochrome c oxydase : applications en synthèse stéréosélective (1997)
- 49) O. SIRI Vers de nouveaux transporteurs du monoxyde d'azote (1997)
- 50) C. COMTE Réactivité des gaz rares (1997)
- 51) C. TARDIEUX Réactivité du dioxygène vis à vis de complexes biscyclamiques du cobalt (1997)
- 52) F. LETUMIER Action et catalyse de l'ozone lors de la délignification (1997)
- 53) F. RABIET Synthèse et caractérisation de ligands macrocycliques en série tétraazamacrocyclique. Elaboration de gels de silice modifiés (1998)
- 54) G. ROYAL Etude d'un procédé innovant de production d'hydrogène (1998)
- 55) S. LACOUR Synthèse de dérivés bimacrocycliques à base de tétraazacycloalcanes : étude de leurs complexes métalliques dans la série du cobalt, du nickel et du cuivre (1998)
- 56) F. BARBETTE Etude de nouveaux macrocycles pour la complexation des actinides. Validation pour la purification des effluents aqueux (1999)
- 57) C. BUCHER N-Substitution régiosélective en série tétraazamacrocyclique. Etude du schéma de coordination de dérivés *trans*-difonctionnalisés du cyclame (1999)
- 58) O. MARCQ Ozonation du D-glucose et du β -cellobiose marqué au carbone 13. Contribution à l'étude du processus d'oxydation des polysaccharides par l'ozone (2000)
- 59) F. JEROME Synthèse et réactivité de dérivés bimacrocycliques face à face de type biscalcorole et porphyrine corrole (2000)
- 60) R. TRIPIER Nouvelles synthèses de polyazacycloalcanes. Complexation. Epuration des eaux/liquides (2000)
- 61) F. BOLZE Synthèse et caractérisation de complexes métalliques en série bismacrocyclique (2001)
- 62) L. FREMOND Synthèse et étude physicochimique de ligands macrocycliques, macrobicycliques et macrotricycliques dérivés du (,12-dioxocyclame (2002)
- 63) A. BUCAILLE Applications de séquestrants macrocycliques supportés à un procédé d'élimination du plomb dans l'eau potable (2002)
- 64) F. RASCALOU Greffage sur fibres organiques de ligands macrocycliques azotés pour la séquestration de radioéléments et du cadmium. Application au traitement d'effluents aqueux industriels (2003)
- 65) J-M. LAGRANGE Synthèse en série tétraazamacrocyclique. Etude des propriétés physicochimiques et de coordination de dérivés du tétraazacyclotridécane (2003)
- 66) F. BOSCHETTI Nouvelles synthèses du cyclène et de tétraazacycloalcanes N- et/ou C-fonctionnalisés utilisant des intermédiaires bisaminal (2003)

- 67) G. DAVID Préparation de matériaux hybrides organiques-inorganiques nanostructurés incorporant des complexes tétraazamacrocycliques de cuivre. Application à l'adsorption sélective du dioxygène (2004)
- 68) S. FAURE Synthèse et caractérisation de complexes métalliques en série bistétraazamacocyclique face-à-face. Etude de leurs propriétés photochimiques (2004)
- 69) G. CANARD Matériaux hybrides organiques-inorganiques incorporant des métallocorroles de cobalt(III). Application à l'adsorption sélective du monoxyde de carbone (2004)
- 70) F. CUENOT Caractérisation physicochimique de ligands macrocycliques tétracarbamoyles et de leurs complexes métalliques. Application à un procédé d'élimination du plomb dans l'eau potable (2004)
- 71) F. CHAUX Synthèse de tétraazacycloalcanes fonctionnalisés. Vers l'élaboration de sondes pour la détection de cations métalliques (2005)
- 72) R. BURGAT Etude thermodynamique de la complexation du plutonium IV par des ligands polyaminocarboxylate linéaires et macrocycliques (2007)
- 73) C. SUSPENE Synthèses de matériaux hybrides incorporant des ligands chélatants tétraazotés. Application à la fixation de gaz (2007)
- 74) G. VOLLMER Etude thermodynamique et cinétique de polyazamacrocycles mono- et ditopiques. Application à des procédés d'épuration d'effluents par séquestration sélective de métaux toxiques (2007)
- 75) J.-P. TREMBLEY-MORIN Bisporphyrines symétriques et dissymétriques pour l'étude du transfert d'énergie singulet-singulet intramoléculaire à travers l'espace et transfert électronique intermoléculaire (2009)
- 76) G. ORTIZ Synthèse de polymères poreux pour l'adsorption sélective du dioxyde de carbone (2011)
- Thèse CNAM**
- 77) C. PINOT Synthèse et étude physicochimique en série arylpropionique (1991)