



Pr Franck LE DERF



Professor

Bioorganic chemistry team

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PROFESSIONAL EXPERIENCES

- 2010- Professor, University of Rouen Normandy, France.
- 2008-2009 Visiting researcher, University of Austin, USA.
- 2000-2010 Assistant Professor, University of Angers, France.
- 1999-2000 Post-doctoral fellowship at CEA – Saclay, France.
- 2007-2009 Non-permanent lecturer position (ATER), University of Angers.

EDUCATION

- 2008 Accreditation to supervise research (H.D.R)
- 1995-1998 PhD in Organic Chemistry, Universities of Angers (France)-Zaragoza (Spain).
- 1993-1994 M.S. Supramolecular Chemistry, University of Toulouse, France.

ADMINISTRATIVE & INSTITUTIONAL RESPONSIBILITIES

- 2014- Director of the university institute of technology, Evreux France.
- 2018- head of group COBRA-Evreux laboratory.
- 2013-2017 head of the supramolecular chemistry team, COBRA laboratory.

RESEARCH INTERESTS

Surface modification; analytical chemistry; biosensors, organic chemistry.

Immobilization of molecular receptors by surface modifications (electroconducting polymers, self assembled monolayers, electrografting...); Studies of host-guest interactions by electrochemical, spectroscopic methods (NMR, UV, IR, SPR, ...), mass spectrometry, separative methods (CPG, HPLC, CE, ...).

SCIENTIFIC ACHIEVEMENTS

Academic record (h-index: 24)

88 publications, 1 patent, 30 invited lectures (academia & industry)

PUBLICATIONS

- 1) Investigation of chromate and nitrate removal by adsorption at the surface of an amine-modified cocoa shell adsorbent
P. Nkuigie Fotsing; N. Bouazizi; E. Djoufac Woumfo; N. Mofaddel; F. Le Derf; J. Vieillard.
Journal of Environmental Chemical Engineering, 2020, in press.
- 2) Copper-loaded SBA-15 silica with improved electron mobility-conductance and capacitance properties
R. Ouargli-Saker; N. Bouazizi; S. Lassouad; S. Ammar; J. Vieillard; F. Le Derf; A. Azzouz.
Journal of Inorganic and Organometallic Polymers and Materials, 2020, in press
- 3) Surface modification of biomaterials based on cocoa shell with improved nitrate and Cr(vi) removal
P. Nkuigie Fotsing; E. Djoufac Woumfo; S. Mezghich; M. Mignot; N. Mofaddel; F. Le Derf; J. Vieillard.
RSC Advances, 2020, 10, 20009–20019.
- 4) Modification of fibrous membrane for organic and pathogenic contaminants removal: from design to application
M. N. Morshed; N. Behary; N. Bouazizi; J. Vieillard; J. Guan; F. Le Derf; V. Nierstrasz.
RSC Advances, 2020, 10, 13155-13173.
- 5) Development of New Composite Fibers with Excellent UV Radiation Protection
N. Bouazizi, A. Abed, S. Giraud, A. El Achari, C. Campagne, M. Neaz Morshed, O. Thoumire, R. El Moznine, O. Cherkaoui, J. Vieillard, F. Le Derf.
Physica E: Low-dimensional Systems and Nanostructures, 2020, 118, 113905.
- 6) Heterogeneous Sonogashira cross-coupling reaction on COC surface for the grafting of biomolecules - application to isatin
C. Soullignac; B. Cornelio; F. Brégier; F. Le Derf; J.F. Brière; T. Clamens; O. Lesouhaitier; F. Estour; J. Vieillard.
Colloids and Surfaces B: Biointerfaces, 2019, 181, 639-647.
- 7) CuO Nanosheets Modified with Amine and Thiol Grafting for High Catalytic and Antibacterial Activities.
J. Vieillard, N. Bouazizi, M. Morshed ; T. Clamens ; F. Desriac ; R. Bargougui; P. Thébault, O. Lesouhaitier , F. Le Derf, A. Azzouz.
Industrial & Engineering Chemistry Research, 2019, 58, 10179-10189.
- 8) Cobalt nanoparticles embedded into polydimethylsiloxane-grafted cocoa shell: Functional agrowaste for CO₂ capture
J. Vieillard; N. Bouazizi; F. Fioresi; R. Bargougui; N. Brun; P. Nkuigie Fotsing; E. Djoufac Woumfo; O. Thoumire; H. Atmani; N. Mofaddel; F. Le Derf.
Journal of Materials Science: Materials in Electronics, 2019, 30, 3942-3951.
- 9) Metal-inorganic-organic core-shell material as efficient matrices for CO₂ adsorption: Synthesis, properties and kinetic studies
J. Vieillard, N. Bouazizi, R. Bargougui, P. Nkuigie Fotsing, O. Thoumire, G. Ladam, N. Brun, J.-F. Hochepped, E. Djoufac Woumfo, N. Mofaddel, F. Le Derf, A. Azzouz.
Journal of the Taiwan Institute of Chemical Engineers, 2019, 95, 452-465.
- 10) Entrapment and stability of iron nanoparticles within APTES modified graphene oxide sheets with improved catalytic activity
N. Bouazizi, J. Vieillard, R. Bargougui, N. Couvrat, O. Thoumire, S. Morin, G. Ladam, N. Mofaddel, N. Brun, A. Azzouz, F. Le Derf.
Journal of Alloys and Compounds, 2019, 771, 1090-1102.

- 11) Electrografting of diazonium salt for SPR application
F. Fioresi, A. Rouleau, K. Maximova, J. Vieillard, W. Boireau, C. Elie Caille, C. Soullignac, R. Zeggari, T. Clamens, O. Lesouhaitier, N. Mofaddel, F. Le Derf.
Materials Today: Proceedings 6, 2019, 340–344.
- 12) Michael addition of 1,3-dicarbonyl compounds catalyzed by iron oxide nanoparticles
M. Jebari, N. Bouazizi, R. Bargougui, F. Rezgui, J. Maddaluno, F. Le Derf, J. Vieillard, J. Legros.
Tetrahedron Letters, 2018, 59, 4044-4046.
- 13) Silver Nanoparticles Embedded Copper Oxide as Efficient Core-shell for Catalytic reduction of 4-nitrophenol and Antibacterial activity improvements
N. Bouazizi, J. Vieillard, P. Thebault, F. Desirac, T. Clamens, R. Bargougui, N. Couvrat, O. Thoumire, N. Brun, G. Ladam, S. Morin, N. Mofaddel, O. Lesouhaitier, A. Azzouz, F. Le Derf.
Dalton Transactions, 2018, 47, 9143-9155.
- 14) Cocoa shell-deriving hydrochar modified through aminosilane grafting and cobalt particle dispersion as potential carbon dioxide adsorbent
J. Vieillard, N. Bouazizi, R. Bargougui, N. Brun, P. Fotsing Nkuigie, E. Oliviero, O. Thoumire, N. Couvrat, E. Djoufac Woumfo, G. Ladam, N. Mofaddel, A. Azzouz, F. Le Derf.
Chemical Engineering Journal, 2018, 342, 420-428.
- 15) Influence of a mixture of metals on PAHs biodegradation processes in soils
O. Baltrons; M. Vilaseca; C. Gutiérrez-Bouzán; F. Le Derf; F. Portet-Koltalo; C. Palet.
Science of the Total Environment, 2018, 628-629, 150-158.
- 16) Improvement in CO₂ adsorption capacity of cocoa shell through functionalization with amino groups and immobilization of cobalt nanoparticles
N. Bouazizi, R. Bargougui, N. Brun, P. Nkuigie Fotsing, O. Thoumire, G. Ladam, E. Djoufac Woumfo, N. Mofaddel, F. Le Derf, J. Vieillard.
Journal of Environmental Chemical Engineering, 2018, 6, 325-331.
- 17) Development of a novel functional core-shell-shell nanoparticles: From design to antibacterial applications
N. Bouazizi, R. Bargougui, P. Thebault, T. Clamens, F. Desriac, F. Fioresi, G. Ladam, S. Morin-Grognet, N. Mofaddel, O. Lesouhaitier, F. Le Derf, J. Vieillard.
Journal of Colloid and Interface Science, 2018, 513, 726-735.
- 18) Microwave-assisted polyol synthesis of mesoporous Ta doped mixed TiO₂/SnO₂: Application for CO₂ capture
R. Bargougui, N. Bouazizi, J.-F. Hochepped, F. Le Derf, J. Vieillard, S. Ammar.
Journal of Alloys and Compounds, 2017, 728, 391-399.
- 19) Concentrations and Source Identification of Polycyclic Aromatic Hydrocarbons (PAHs) and Polychlorinated Biphenyls (PCBs) in Agricultural, Urban/Residential, and Industrial Soils, East of Oran (Northwest Algeria)
A. Alfadji, A. Touabet, F. Portet-Koltalo, F. Le Derf, N. Merlet-Machour.
Polycyclic Aromatic Compounds, 2017.
- 20) Low effect of phenanthrene bioaccessibility on its biodegradation in diffusely contaminated soil
M. Crampon, A. Cébron, F. Portet-Koltalo, S. Uroz, F. Le Derf, J. Bodilis.
Environmental Pollution, 2017, 225, 663-673.
- 21) CuO-loaded SBA-15@ZnO with improved electrical properties and affinity towards hydrogen

- N. Bouazizi, S. Louhichi, R. Radhouane, J. Vieillard, F. Le Derf, A. Azzouz
Applied Surface Science, 2017, 404, 146-153.
- 22) Chemical modification of the cocoa shell surface using diazonium salts
F. Fiorese, R. Bargougui, N. Bouazizi, T. Boudharaa, P. Nkuigwe Fotsing, E. Djoufac Woumfo, N. Brun, N. Mofaddel, J. Vieillard, F. Le Derf.
Journal of Colloid and Interface Science, 2017, 494, 92-97.
- 23) Synthesis and properties of ZnO-HMD@ZnO-Fe/Cu core-shell as advanced material for hydrogen storage
N. Bouazizi, T. Boudharaa, R. Bargougui, J. Vieillard, S. Ammar, F. Le Derf, A. Azzouz.
Journal of Colloid and Interface Science, 2017, 491, 89-97.
- 24) Influence of the vegetative cover on the fate of trace metals in retention systems simulating roadside infiltration swales.
M.C. Leroy, S. Marcotte, M. Legras, V. Moncond'huy, F. Le Derf, F. Portet-Kotalo
Science of the Total Environment, 2017, 580, 482-490.
- 25) Alternative techniques to HPCD to evaluate the 1 bioaccessible fraction of soil-associated PAHs and correlation to biodegradation efficiency
M. Crampon, J. Bodilis, F. Le Derf, F. Portet-Kotalo.
Journal of Hazardous Materials, 2016, 314, 220-229.
- 26) Performance of vegetated swales for improving road runoff quality in a moderate traffic urban area
Science of the Total Environment
M.C. Leroy, M. Legras, F. Le Derf, V. Moncond'huy, I. Polaert, F. Portet-Kotalo, S. Marcotte
Science of the Total Environment, 2016, 566-557, 113-121.
- 27) Atmospheric solid analysis probe-ion mobility mass spectrometry: an original approach to characterize grafting on cyclic olefin copolymer surfaces
J. Vieillard, M. Hubert-Roux, F. Brisset, C. Soullignac, F. Fiorese, N. Mofaddel, S. Morin-Grognet, C. Afonso, F. Le Derf.
Langmuir, 2015, 31, 13138-13144.
- 28) Assessment of PAH dissipation processes in large-scale outdoor mesocosms simulating vegetated road-side swales
M.C. Leroy, M. Legras, S. Marcotte, V. Moncond'huy, N. Machour, F. Le Derf, F. Portet-Kotalo.
Science of the Total Environment, 2015, 520, 146-153.
- 29) Application of biosurfactants and a periodic voltage gradient for enhanced electrokinetic remediation of metals and PAHs in dredged marine sediments.
M.T. Ammami, F. Portet-Kotalo, A. Benamar, C. Duclairoir-Poc, H. Wang, F. Le Derf
Chemosphere, 2015, 125, 1-8.
- 30) Surface Functionalization of Cyclic Olefin Copolymer with Aryldiazonium Salts: a Covalent Grafting Method
F. Brisset, J. Vieillard, B. Berton, S. Morin-Grognet, C. Duclairoir-Poc, F. Le Derf
Applied Surface Science, 2015, 329, 337-346.
- 31) Multilayer coatings based on a cationic β -cyclodextrin polymer: new chiral stationary phases for open-tubular electrochromatography.
G. Pédehontaa-Hiaa, M. Guerrouache, B. Carbonnier, F. Le Derf, C. Morin.
Chromatographia, 2015, 78, 33-541
- 32) Correlations between PAHs bioavailability, degrading bacteria and soil characteristics during their biodegradation in five dissimilar diffusively contaminated soils.

- M. Crampon, F. Bureau, M. Akpa-Vinceslas, J. Bodilis, N. Machour, F. Le Derf, F. Portet-Koltalo.
Environmental Science and Pollution Research, 2014, 21, 8133-8145.
- 33) Simultaneous electrokinetic removal of polycyclic aromatic hydrocarbons and heavy metals from an aged contaminated model sediment using mixed enhancing agents.
M.T. Ammami, A. Benamar, H. Wang, C. Bailleul, M. Legras, F. Le Derf, F. Portet-Koltalo.
International Journal of Environmental Science and Technology, 2014, 11, 1801-1816.
- 34) Investigation of the release of PAHs from artificially contaminated sediments using cyclolipopeptidic biosurfactants.
F. Portet-Koltalo, M.T. Ammami, A. Benamar, H. Wang, F. Le Derf, C. Duclairoir-Poc.
Journal of Hazardous Materials, 2013, 261, 593-601.
- 35) Analysis of hydroxylated metabolites of polycyclic aromatic hydrocarbons in soils by two alternative methods: selective purification by molecularly imprinted polymers - HPLC/FLD and silylation-GC/MS.
O. Baltrons, M. López-Mesas, C. Palet, F. Le Derf, F. Portet-Koltalo.
Anal. Methods, 2013, 5, 6297-6305.
- 36) Ferrocenyl-triazolyl-tetrathiafulvalene assemblies: synthesis and electrochemical recognition properties
B.-T. Zhao, L.-W. Liu, X.-C. Lib, G.-R. Qu, E. Belhadj, F. Le Derf, M. Sallé.
Tetrahedron Letters, 2013, 54, 23-26.
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A. Dagorn, M. Hillion, A. Chapalain, O. Lesouhaitier, C. Poc, J. Vieillard, S. Chevalier, L. Taupin, F. Le Derf, M. G.J. Feuilloley.
Microbiology, 2013, 159, 339-351.
- 38) Tetrathiafulvalene-annulated dipyrrolylquinoxaline: the effect of fluoride on its optical and electrochemical behaviors.
H.-P. Jia, J. C. Forgie, S.-X. Liu, L. Sanguinet, E. Levillain, F. Le Derf, M. Sallé, A. Neels, P. J. Skabara, S. Decurtins.
Tetrahedron, 2012, 68, 1590-1594.
- 39) Quantification of *Pseudomonas aeruginosa* hydrogen cyanide production by a polarographic approach.
A. Blier, J. Vieillard, E. Gerault, A. Dagorn, T. Varacavoudin, F. Le Derf, N. Orange, M. Feuilloley, O. Lesouhaitier.
Journal of Microbiological Methods, 2012, 90, 20-24.
- 40) Tetrathiafulvalene-Based Architectures: From Guests Recognition to Self-Assembly.
D. Canevet, J.-Y. Balandier, J. Lyskawa, G. Trippé, S. Goeb, F. Le Derf, M. Sallé.
Phosphorus, Sulfur, and Silicon and the Related Elements, 2011, 186, 1153-1168.
- 41) A novel redox-active calix[4]arene-tetrathiafulvalene dyad.
B.-T. Zhao¹, X.-M. Zhu, Q.-M. Peng, Z.-N. Yan, F. Le Derf, Marc Sallé.
Cent. Eur. J. Chem., 2011, 9, 1102-1108.
- 42) C-type natriuretic peptide (CNP) modulates quorum sensing molecules and toxin productions in *Pseudomonas aeruginosa*.
A.-S. Blier, W. Veron, A. Bazire, E. Gerault, L. Taupin, J. Vieillard, K. Rehel, A. Dufour, F. Le Derf, N. Orange, C. Hulen, M. G.J. Feuilloley, O. Lesouhaitier.
Microbiology, 2011, 157, 1929-1944.

- 43) Intermolecular interactions in self-assembled monolayers of tetrathiafulvalene derivatives.
P.-Y. Blanchard, O. Alévêque, S. Boisard, C. Gautier, A. El-Ghayoury, F. Le Derf, T. Breton, E. Levillain.
Physical Chemistry Chemical Physics, 2011, 13, 2118–2120.
- 44) Novel application of cyclolipopeptide amphiphile: feasibility study as additive to remediate PAHs contaminated sediments.
A. Groboillot, F. Portet-Koltalo, F. Le Derf, M. J.G. Feuilloley, N. Orange, C. Duclairoir Poc.
Int. J. Mol. Sci., 2011, 12, 1787-1806.
- 45) Positive Homotropic Allosteric Receptors for Neutral Guests: Annulated Tetrathiafulvalene-Calix[4]pyrroles as Colorimetric Chemosensors for Nitroaromatic Explosives.
J. S. Park, F. Le Derf, C. M. Bejger, V. M. Lynch, J. L. Sessler, K. A. N., C. Johnsen, J. O. Jeppesen.
Chem. Eur. J., 2010, 16, 848-854.
- 46) Synthesis and Electrochemical Behavior of Redox-Active Thiacalix[4]arene-Tetrathiafulvalene Assemblies.
B.T. Zhao, Z. Zhou, Z. N. Yan, E. Belladji, F. Le Derf, M. Sallé.
Tetrahedron Letters, 2010, 5815-5818.
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A. Benedetto, M. Balog, H. Rayah, F. Le Derf, P. Viel, S. Palacin, M. Sallé.
Electrochimica Acta, 2008, 3779-3788.
- 48) Amidopyridyls-Tetrathiafulvalene molecular assemblies : original electrochemical recognition properties for Cd²⁺
C. Benhaoua, M. Mazari, N. Mercier, E. Levillain, F. Le Derf, M. Sallé.
New J. Chem., 2008, 32, 913-916.
- 49) A versatile building block for EDOT or PEDOT functionalization.
M. Balog, H. Rayah, F. Le Derf, M. Sallé.
New J. Chem., 2008, 32, 1183-1188.
- 50) Tribological and electrical study of fluorinated diazonium films as dry lubricants for electrical contacts.
D. Alamarguy, A. Benedetto, M. Balog, S. Noël, P. Viel, F. Le Derf, F. Houzé, M. Sallé, S. Palacin.
Surf. Interface Anal., 2008, 40, 802-805.
- 51) Electro-reduction of diazonium salts on gold: why do we observe multi-peaks ?
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Electrochimica Acta., 2008, 7117-7122.
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Tetrahedron Letters, 2008, 49, 5452-5454.
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S. Dolder, S.X. Liu, F. Le Derf, M. Sallé, A. Neels, S. Decurtins.
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M.-J. Blesa, B.-T. Zhao, F. Le Derf, D. Canevet, C. Benhaoua, M. Mazari, M. Allain, M. Sallé.

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55) A tetrathiafulvalene-tetracyanoanthraquinodimethane (TTF-TCNAQ) diad with a chemically tunable HOMO-LUMO gap.

J. Wu, S.X. Liu, A. Neels, F. Le Derf, M. Sallé, S. Decurtins.

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56) Bis(calixcrown)tetrathiafulvalene receptors.

M.J. Blesa, B.T. Zhao, M. Alain, F. Le Derf, M. Sallé.

Chem. Eur. J., 2006, 12, 1906-1914.

57) Electrochemical recognition by a tetrathiafulvalene-tetracarbonyl-calix[4]arene Assembly.

J. Lyskawa, M. Sallé, F. Le Derf, E. Levillain, M. Alain, P. Viel, S. Palacin.

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58) Electroactive C₂ symmetry assemblies based on the biphenyl scaffold and tetrathiafulvalene (TTF) units.

G. Delogu, D. Fabbri, M. A ettori, M. Sallé, F. Le Derf, M-J. Blesa, M. Allain.

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J. Lyskawa, F. Le Derf, E. Levillain, M. Mazari, M. Sallé.

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60) Immobilization and recognition properties of tetrathiafulvalene-based podands with one or two thiol functional groups.

J. Lyskawa, M. Oçafraïn, G. Trippé, F. Le Derf, M. Sallé, P. Viel, S. Palacin.

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61) A study by in situ, real time, spectroelectrochemical FTIR and DFT calculations of the reversible complexing ability of electroactive crown-ethers.

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66) Crown-tetrathiafulvalenes attached to a pyrrole or an EDOT unit : synthesis, electropolymerization and recognition properties.

G. Trippé, F. Le Derf, J. Lyskawa, M. Mazari, J. Roncali, A. Gorgues, E. Levillain, M. Sallé.

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J. Phys. IV, 2004, 114, 573-575.
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M. Carano, B. Colonna, L. Echegoyen, F. Le Derf, E. Levillain, M. Sallé.
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C. R. Chimie, 2003, 6, 573-580.
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New J. Chem., 2002, 26, 1320-1323.
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Chem. Eur. J., 2001, 7, 447-455.
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