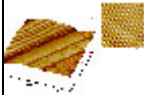


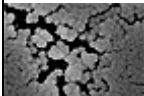


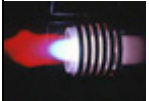
**Possible research topics for 1 semester research projects
for master level exchange students**

Each application must be approved by the laboratory director

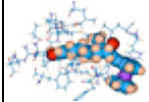
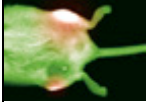
Moissan department

Energy, Materials and Process Engineering

	<p>Physical Chemistry of Surfaces Philippe Marcus <i>In association with CNRS</i></p>	<p>UMR 7045</p>	<ul style="list-style-type: none"> Nanostructure of oxide layers on metal surfaces (V. Maurice) Passivation and localized corrosion of metals and alloys (P. Marcus) Bio-interfaces: interactions of proteins with passivated metal surfaces. Applications to biofilms, biocompatibility and biomaterials (A. Galtayries, I. Frateur, F. Prima) Surface treatments, coatings and corrosion inhibition; mechanisms of underpaint corrosion; analytical atomic spectroscopy (ICP-OES) combined with electrochemistry (K. Ogle, P. Volovitch) <p>The above research topics involve major surface analytical techniques (XPS, ToFSIMS, IRRAS, STM, AFM) combined with electrochemical methods (voltametry, electrochemical impedance spectroscopy, electrochemical quartz crystal microbalance)</p> <ul style="list-style-type: none"> Modeling and numerical simulation of surface reactivity (atomistic models, DFT, Kinetic Monte-Carlo) (B. Diawara, D. Costa, P. Cénédèse) Microstructure-Properties of functional metallic alloys : shape memory alloys and metallic glasses for industrial and biomedical applications (R. Portier, Philippe Vermaut)
	<p>Photovoltaïc Energy Development and Research Institute Daniel Lincot <i>In association with CNRS and EDF</i></p>	<p>UMR 7174</p>	<ul style="list-style-type: none"> Thin film deposition processes for photovoltaics : electrodeposition, chemical deposition, thermal annealing and recrystallization processes, sputtering (E. Chassaing, N. Naghavi, F. Donsanti, G. Savidand, D. Lincot) Innovative thin film solar cells: thin Silicon and nanostructured hybrid (E. Chassaing, F. Donsanti, D. Lincot) Solar cell characterization and modelization methods (J.F. Guillemoles) Very high efficiency concepts for photovoltaics (P. Olsson, J.F. Guillemoles) Economic & strategic studies in photovoltaics (Y. Schlumberger)
	<p>Laboratoire de Chimie de la matière condensée de Paris Didier Gourier <i>In association with CNRS, Paris VI University, Collège de France</i></p>	<p>UMR 7574</p>	<ul style="list-style-type: none"> Optical applications of nanostructured materials (luminescence and spectroscopic studies on oxide nanoparticles and films) (P. Barboux) Synthesis of nanoparticles, laser spray pyrolysis, functionalization and nanocomposites. Semiconducting oxides for spin manipulation (L. Binet) Synthesis and magnetic doping of semiconducting oxides, study of electron and nuclear magnetism by Electron Magnetic Resonance Glass formulation, structure and properties for the confinement of high level nuclear wastes (Daniel Caurant, Odile Majérus)
	<p>Electro-chemistry, Interface chemistry and Modelling for Energy Michel Cassir <i>in association with CNRS</i></p>	<p>UMR 7575</p>	<ul style="list-style-type: none"> Electrochemistry, Materials and Energy : Elaboration, characterization, prototypes, modelling. Nanostructured solar cells (D. Lincot, T. Pauporte) Advanced Molten salt and SOFC Fuel Cells (M. Cassir) New molten salt processes for nuclear energy conversion (S. Delpech) Advanced separation processes (G Cote, M. Fedoroff) Multiscale modelling; electrochemical engineering modelling (P. Mandin) Theory and Modelling of complex Systems (DFT) (C. Adamo) Molecular simulation of confined fluids (A. Fuchs) Theory and reactivity of interfaces (D. Di Caprio, M. Turmine) Liquid-liquid extraction (G. Cote, A Chagnes) Speciation in organic phases, study of ageing of solvents, modelling of extraction equilibria of uranium. Reactions at solid/solution interfaces (M. Fédoroff, G. Lefèvre) <p>Acido-basicity and sorption phenomena at surfaces of metallic oxides, reactivity of particles in cooling circuits of nuclear plants</p>

	<p>Plasma process engineering and surface treatment, Pr Daniel Morvan, <i>in association with UPMC</i></p>	<p>EA 3492</p>	<ul style="list-style-type: none"> • Plasma processes for depollution (S. Cavadias), keywords : GCMS, COV, NOx, plasma diagnostics... • Plasma reactors to synthesize high purity materials (D. Morvan), keywords : TBC, SOFC, photovoltaic, plasma diagnostics... • Surface treatments and deposition of thin film by non equilibrium low pressure and atmospheric plasma processes (F. Arefi), keywords : TCO coatings, antifouling coatings, barrier coatings, selective functional grafting of polymers, plasma diagnostics, biotechnology, biomedical,... • Plasma Processes for micro-system applications (M. Tatoulian), keywords : plasma diagnostics, polymers, catalysis, biology...
	<p>Physicochemistry of Electrolytes, Colloids and Analytical Sciences Prof. Valérie Cabuil, <i>in association with University of Paris VI</i></p>	<p>UMR 7195</p>	<ul style="list-style-type: none"> • Miniaturized electrokinetic separation techniques (P. Gareil) CE and CE-MS coupling, on-line electrokinetic preconcentration techniques, pharmaceutical, biological and environmental applications.

Friedel department Molecular Chemistry

	<p>Charles Friedel : Selective organic syntheses and natural products and Chemistry and biochemistry of molecular complexes Dr Anne Vessières Jaouen <i>In association with CNRS</i></p>	<p>UMR 7223</p>	<ul style="list-style-type: none"> • Transition metal-catalyzed C-C bond formation involving C-H bond activation (S. Darses) • Novel metal-catalyzed cycloisomerization reactions for C-C, C-O and C-N bond formations (V. Michelet) • Organic synthesis. Total synthesis of biologically relevant natural products (P. Phansavath) • Transition Metal-catalyzed C-H bond formation towards the synthesis of biologically active molecules (V. Vidal) • Biosynthesis of anatoxin-a, a neurotoxin from cyanobacteria: genomic and biochemical approaches (A.Mejean, O. Ploux) • Enzymatic therapeutic targets in Mycobacterium tuberculosis: from the enzyme to the inhibitor (S. Mann, O.Ploux) • Screening of the "French National Chemical Library" (Chimiothèque Nationale) for identification of new antibiotics (J.-M. Paris) • Enzymology of Laccases: biocatalysis and biofuel cells (C. Jolivald) • Organometallic chemistry and bioorganometallics : synthesis and biological activity of antiestrogens and antiandrogens modified by organometallic fragments. • Bioanalysis using organometallic tracers • Organometallic catalysis and enzymatic processes. • Bioprocess engineering : environmentally friendly protection of seeds against fungi, protection of films against biofilms.
	<p>Chemical and Genetic Pharmacology Daniel Scherman <i>In association with CNRS, INSERM and Paris V University</i></p>	<p>UMR 8151</p>	<ul style="list-style-type: none"> • Electrochemistry applied to life science (F. Bedioui). Electrochemical sensors, electroanalysis • Organic Synthesis, imaging (J. Herscovici) Diversity oriented synthesis, new MRI contrast agents, molecular imaging, organic synthesis using automatic workstation and miniaturized devices. Small molecule microarrays.

More information about our research units on: <http://www.chimie-paristech.fr/spip.php?rubrique113>