



Organometallic Catalysis for Green and Sustainable Chemistry

Brazil
France

BRAZIL-FRANCE BILATERAL WORKSHOP - BFBW

October 19-22, 2015

Angra dos Reis – RJ, Brazil

BOOK OF ABSTRACTS



Brazil-France Bilateral Workshop

“Organometallic Catalysis for Green and Sustainable Chemistry”

19 - 22 October 2015
Angra dos Reis – RJ, Brazil

Joint with the 5th Latin American Symposium on Coordination and Organometallic Chemistry, (SILQCOM), this workshop aims at bringing together chemists from Brazil and France with complementary, strong and diverse expertise in one of the pillars supporting green chemistry: homogeneous catalysis for clean processes leading to complex molecules and materials, biomass transformations into useful industrial intermediates, biodegradable polymers, and energy economy or generation.

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*Green Chemistry focuses on the design and implementation of chemical technologies, processes and services that are safe, energy efficient and environmentally sustainable. Adopting Green Chemistry innovations gives industry sustainable product and process alternatives that will continue to meet market demands while enhancing sustainability, improving human health and driving the economy, thereby advancing the human condition. **Sustainable chemistry** is a scientific concept that seeks to improve the efficiency with which natural resources are used to meet human needs for chemical products and services. Catalysis is not only the main pillar of the 12 principles of green and sustainable chemistry but it also contributes to most of these principles such as atom economy and no waste reactions, no toxic intermediates and products, safe solvents including water, energy generation and efficiency, renewable feedstocks as raw materials. Catalysis takes the best profit of these principles for the building of complex molecules and natural products, medicinal drugs, molecular materials and polymers or key industrial intermediates, via clean and low energy processes.*

Several challenges in catalysis for green and sustainable chemistry will be addressed during the bilateral seminar seeking for strong cooperations and faster innovations in the future for the profit of both countries. □

1. C-H bond functionalization and cross-coupling reactions
2. Alkene metathesis catalysis adding value to natural products
3. Catalysis and energy
4. Catalytic biomass transformations
5. Development of cheap and environment tolerant metal catalysts
6. Green processes in water
7. Oligomerization and dimerization of alkenes
8. Biodegradable polymers

Summary

The primary objective of this bilateral seminar is to bring together chemists from Brazil and France with complementary, strong and diverse expertises in at least one of the pillars supporting green chemistry: (i) homogeneous catalysis arising from molecular metal complexes, including their heterogeneous applications, for clean processes leading to complex molecules and materials, biomass transformations into useful industrial intermediates, or biodegradable polymers formation, with energy economy or generation, (ii) for knowledge improvement to educate young scientists in this growing field and (iii) to foster bilateral complementary cooperations to better innovate and discover applications with advanced catalysts, clean synthetic methods, catalytic processes for industry and thus to build a task force in this catalysis field to the profit of our society. In a second phase after establishment of cooperations it is our objectives to offer industry useful interactions.

Résumé

Le principal objectif de ce séminaire bilatéral est de rassembler des chimistes du Brésil et de France enrichis d'expériences complémentaires fortes et variées dans au moins un des piliers soutenant la chimie verte : (i) Catalyse homogène issue des complexes moléculaires de métaux, incluant leurs applications hétérogènes, pour des procédés propres conduisant à des molécules complexes et de matériaux, la transformation de la biomasse en intermédiaires industriels utiles, ou la formation de polymères biodégradables, avec économie en énergie ou pour la génération d'énergie, (ii) pour l'amélioration des connaissances pour la formation des jeunes scientifiques dans ce domaine en pleine expansion et (iii) pour favoriser des coopérations bilatérales complémentaires pour mieux innover et découvrir des applications avec des catalyseurs performants, des méthodes de synthèse propres, des procédés catalytiques pour l'industrie, et ainsi pour former une force opérationnelle dans le domaine de la catalyse pour le bénéfice de notre société. Dans une deuxième phase après l'établissement de coopérations durables c'est notre objectif d'offrir des interactions utiles aux industriels.

Resumo

O principal objetivo deste seminário bilateral é reunir os químicos do Brasil e da França, com especialidades complementares, fortes e diversificadas em pelo menos um dos pilares de sustentação química verde: (i) catálise homogênea resultante de complexos metálicos moleculares, incluindo as suas aplicações heterogêneas, para processos limpos que conduzem a moléculas complexas e materiais, transformações biomassa em produtos intermediários industriais úteis, ou a formação de polímeros biodegradáveis, com economia de energia ou da produção, (ii) para a melhoria do conhecimento para educar jovens cientistas neste campo crescente e (iii) promover bilateral complementar cooperações para melhor inovar e descobrir aplicações com catalisadores avançados, métodos sintéticos limpos, processos catalíticos para a indústria e, assim, construir uma força-tarefa neste campo da catálise para o benefício da nossa sociedade. Numa segunda fase, após o estabelecimento de cooperações, são os nossos objetivos propor colaborações úteis ao setor industrial.

Timetable

MONDAY, OCTOBER 19

14:20 - 14:30	BFBW Opening Ceremony	
14:30 - 15:00	Pierre H. Dixneuf	The Power of Ruthenium(II) Catalysts for the Functionalisation of C-H Bonds Even in Water
15:00 - 15:30	Régis Gauvin	Supported Organometallic Catalysis for Improved Chemical Transformations
15:30 - 16:00	Marc Taillefer	Arylation of Nucleophiles: Recent Progress and Mechanistic Insight
16:05 - 16:30	Coffee-break	
16:30 - 16:50	Katia B. Gusmão	Anchoring Via Covalent Binding of β -Diimine-Nickel Complexes for Catalytic Reactions
16:50 - 17:10	Dalmo Mandeli	Oxidation of Alkanes and Benzene with Hydrogen Peroxide Catalyzed by Ferrocene in the Presence of Acids
17:10 - 17:30	Eduardo N. dos Santos	Fine Chemicals from Biomass Employing Metathesis Reaction

TUESDAY, OCTOBER 20

9:00 - 9:45	Rinaldo Poli	Well-Defined Polymeric Nanoreactors for Biphasic Catalysis
10:15 - 10:35	Jackson D. Scholten	Synthesis and Catalytic Application of Metal Nanoparticles in Ionic Liquids
10:35 - 11:00	Coffee-break	
11:00 - 11:45	Carlos R. D. Correia	Enantioselective Pd-Catalyzed Heck Arylations Using Arenediazonium Salts: Is There Anything Special About Them?
12:15 - 12:35	Mario Meneghetti	Sn(IV)-Based Organometallics as Catalysts for the Production of Fatty Acid Alkyl Esters

WEDNESDAY, OCTOBER 21

Sightseeing & free scientific discussions and networking

THURSDAY, OCTOBER 22

9:00 - 9:30	Jean-Francois Carpentier	Stable, Still Highly Reactive Heavy Alkaline- and Divalent Rare-Earth Complexes for Hydroelementation Catalysis
9:30 - 10:00	Oswaldo Casagrande Junior	Selective Ethylene Oligomerization with Nickel and Chromium Catalysts Bearing Bi- and Tridentate Ligands
10:00 - 10:30	Evgueni Kirillov	Propylene Polymerization with Cationic Isolelective Metallocenes
10:35 - 11:00	Coffee-break	
11:00 - 11:30	Christian Bruneau	Metal-Catalyzed Hydrogen Transfer for Green C-H Bond Functionalization
11:30 - 12:00	Paulo H. Schneider	Palladium-Catalyzed Synthesis of New Functional Molecular Materials Containing Chalcogens
12:00 - 12:30	Maryse Gouygou	Phosphole-Complexes in Carbonylation Reactions: Applications to Natural Products
12:30 - 12:40	BFBW Closing Ceremony	