

## INTRODUCTION

Heterogeneous catalysis is involved in numerous industrial processes with important impacts on our society and economy.

The characterization of these catalysts – physical properties, efficacy, selectivity – involves analysis techniques which are often applied in situ, enabling real-time investigation during reactions.

The aim of this two-day conference is to present current research on catalysts, focusing on their preparation and characterization, in particular at large-

## 31 MARCH 2014

- 08.30 Registration/Welcom coffee  
09.00 **OFFICIAL OPENING**  
**Pr. Paul Vigny and Dr. Louis Hennet**  
09.30 **OPENING LECTURE**  
**Dr Igor Leontyev**  
**LE STUDIUM® Research Fellow - CEMHTI**

Catalytic activity of carbon-supported Pt nanoelectrocatalysts. Why reducing the size of Pt nanoparticles is not always beneficial?

## SESSION ONE

**Chairman Pr. Andrea E. Russel**

- 10.00 **Pr. Pierre Millet**  
Characterization of electrocatalysts for PEM fuel cells and water electrolysis applications using time-resolved EXAFS spectroscopy.  
10.30 **Pr. Boris Tarasov**  
Metal hydride materials and devices for hydrogen energy storage.  
11.00 Coffee break  
11.30 **Pr. Charles Kappenstein**  
Cellular ceramic versus pellets as catalyst support for green propulsion applications.  
12.00 **Dr. Jean-Sébastien Girardon**  
Examples of original approaches with microfluidic device for the synthesis of gold nanoparticles and for catalyzed oxidation reactions.  
12.30 Lunch

## SESSION TWO

**Chairman Pr. Pierre Millet**

- 14.00 **Dr. Peter Albers**  
Industrial applications of neutrons and synchrotron radiation: influence of particle size, composition and morphology on hydrogen storage capability, activity and selectivity of commercial supported catalysts.  
14.30 **Dr. Dmitry Chernyshov**  
Getting more from a diffraction experiment with synchrotron light and modern detectors.  
15.00 **Dr. Valérie Briois**  
Quick-EXAFS a powerful technique for time-resolved XAS characterization: applications in Catalysis.  
15.30 **Pr. Andrea E. Russel**  
In situ XAS and XRD of electrocatalysts for fuel cells and water electrolyzers.  
16.00 Coffee break  
16.30 **Pr. Yuri Dobrovolsky**  
New solid electrolytes for low temperature electrochemical devices.  
17.00 **Dr. Andrea Zitolo**  
Modelling of Active Site in Fe-based Electrocatalysts for Proton Exchange Membrane Fuel Cell by Using X-ray Absorption Spectroscopy.

18.00 **LE STUDIUM® LECTURE**  
**Pr. Charles Kappenstein**

From the laboratory to space, an exciting adventure: kinetics, catalysis and propulsion.



- 19.30 Tour in Orleans  
20.30 Conference dinner

## 1 AVRIL 2014

08.45 Coffee break

## SESSION THREE

**Chairman : Dr. Igor Leontyev**

- 09.00 **Pr. Xavier Carrier**  
The Preparation of Alumina-Supported Ni-Mo Hydrotreating Catalysts Through a Surface Science Approach in Aqueous Solution.  
09.30 **Pr. Natalia Kononenko**  
Modifications of perfluorinated sulphocationic membranes for fuel cells.  
10.00 **Pr. Nina Smirnova**  
Alternating current synthesis of nanomaterials based on metals and metal oxides.  
10.30 **Asseline Lemoine (Phd student)**  
Investigating structure and chemical arrangement of Co-based nanoparticles by imaging and scattering methods with chemical selectivity.  
10.50 Coffee break

## SESSION FOUR

**Chairman : Pr. Xavier Carrier**

- 11.30 **Dr. Dmitry Doronkin**  
Mechanistic insights into NH3-SCR over Fe-zeolites using operando X-ray absorption and emission spectroscopy.  
12.00 **Dr. Mickael Capron**  
Application of a common catalyst for the one pot synthesis of dimethoxymethane from methanol.  
12.30 Lunch  
14.00 **Dr. Victor Mougel**  
Controlled functionalization of surfaces towards single-sites catalysts: the contribution of solid-state NMR and XAS.  
14.30 **Pr. Ivan Brink**  
Energy harvesting of drifting snow.  
15H00 Discussion  
Needs for the future.  
15H45 Conclusion  
16H00 Coffee break  
16H30 End

## INVITED SPEAKERS

**Dr. Peter Albers**

AQura GmbH • Hanau-Wolfgang • DE

**Pr. Ivan Brink**

Don State Technical University • Rostov-on-Don • RU

**Dr. Valérie Briois**

Synchrotron SOLEIL • Gif-sur-Yvette • FR

**Dr. Mickael Capron**

Université Lille 1 • Villeneuve d'Ascq • FR

**Pr. Xavier Carrier**

Université Pierre et Marie Curie • Ivry-sur-Seine • FR

**Dr. Dmitry Chernyshov**

Swiss-Norwegian Beam Lines at European Synchrotron Radiation Facility • Grenoble • FR

**Pr. Yuri Dobrovolsky**

Institute of Problems of Chemical Physics • Moscow • RU

**Dr. Dmitry Doronkin**

Institute for Chemical Technology and Polymer Chemistry • Karlsruhe • DE

**Dr. Louis Hennet**

CNRS-CEMHTI • Orléans • FR

**Dr. Jean-Sébastien Girardon**

Université Lille 1 • Villeneuve d'Ascq • FR

**Pr. Natalia Kononenko**

Kuban State University • Krasnodar • RU

**Pr. Charles Kappenstein**

Université de Poitiers • Poitiers • FR

**Asseline Lemoine (PhD student)**

CNRS-CRMD • Orléans • FR

**Dr Igor Leontyev (LE STUDIUM® Researcher)**

University of Rostov-on-Don • CNRS-CEMHTI • Orléans • FR

**Pr. Pierre Millet**

Institut de Chimie Moléculaire et des Matériaux d'Orsay • Orsay • FR

**Dr. Victor Mougel**

Laboratory for Inorganic Chemistry • Zurich • SW

**Pr. Andrea E. Russel**

University of Southampton Chemistry • Southampton • UK

**Pr. Nina Smirnova**

Platov South-Russian State Polytechnic University • Novocherkassk • RU

**Pr. Boris Tarasov**

Institute of Problems of Chemical Physics RAS • Moscow • RU

**Dr. Andrea Zitolo**

Synchrotron SOLEIL • Gif-sur-Yvette • FR

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# CONFERENCES

ORLÉANS | 2014

## PROGRAM

## Heterogeneous catalysis : recent advances in preparation and characterization

31 March - 1 April 2014

Centre International  
Universitaire pour la Recherche

## CONVENORS

**Dr. Igor Leontyev**

LE STUDIUM® RESEARCH FELLOW  
on leave from the University  
of Rostov-on-Don • Russia,  
in residence at the CNRS-CEMHTI  
Orléans • France

**Dr. Louis Hennet**

CNRS-CEMHTI • Orléans • France

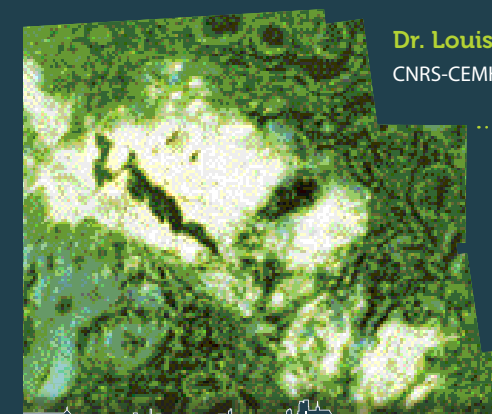
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