CHAIRS

S. Bordiga, *Università di Torino, NIS and INSTM UdR, Italy*

E. A. Quadrelli, *Université de Lyon- CNRS, France*

ORGANIZING COMMITTEE

C. Barolo, G. Berlier, F. Bonino, A. Damin, E. Groppo, C. Lamberti, G. Ricchiardi, V. Crocellà, S. Morandi, A. Piovano, M. Signorile, M. Zanetti, *Università di Torino, NIS and INSTM UdR, Italy*

E. Borfecchia, A. Lazzarini, *University of Oslo, Norway*

SCIENTIFIC COMMITTEE

S. Bordiga, F. Cavani, V. Conte, M. Crucianelli, M. Guidotti, L. Liotta, P. Pollesel, R. Psaro, M. Signoretto, N. Vecchini, *GIC, Italy*

FEES & ECTS CREDITS

Registration fee: 650 € (before 2018-11-02, 750 € after).

The fee includes all the materials for the school, accommodation in in a double/triple occupancy room at the Olympic Village from 7st to 11th January, meals, social dinner, and soft skills training.

Grants can be awarded to young participants.

SOCIAL PROGRAMME

Time for skiing and other winter outdoor activities, for beginners and experts.
Conference dinner

LOCATION

Bardonecchia is a well known sky resort in Piedmont, easily reachable with public transport from Milan, Turin and Lyon.
Nearly once per hour, a train connects the main station in Turin to Bardonecchia in about 90 minutes.

KEY DATES

Registration Deadline:	OCTOBER 15th
Confirmation of acceptance	OCTOBER 26th
Early payment	NOVEMBER 2nd
Registrations will close	NOVEMBER 30th

GIC and EFCAT will assign some grants to cover the registration fee.
Requirements to obtain the grant are detailed in the registration form

REGISTRATION

Application form available on-line:
www.nis.unito.it/ics2019/index.html

Maximum number of participants: 100
Participants will be admitted based on their motivation statement to be written upon registration. .

CONTACT

Dept. of Chemistry
Università di Torino
Via P. Giuria 7 - I-10125 Torino (ITALY)
ics2019winterschool@unito.it

ORGANIZERS

Italian Chemical Society
Interdivisional Group of Catalysis

Società Chimica Italiana
Gruppo Interdivisionale di Catalisi

EFCATS European Federation of Catalysis Societies

European Federation of Catalysis Societies Catalysis

Dept. of Chemistry
Università di Torino

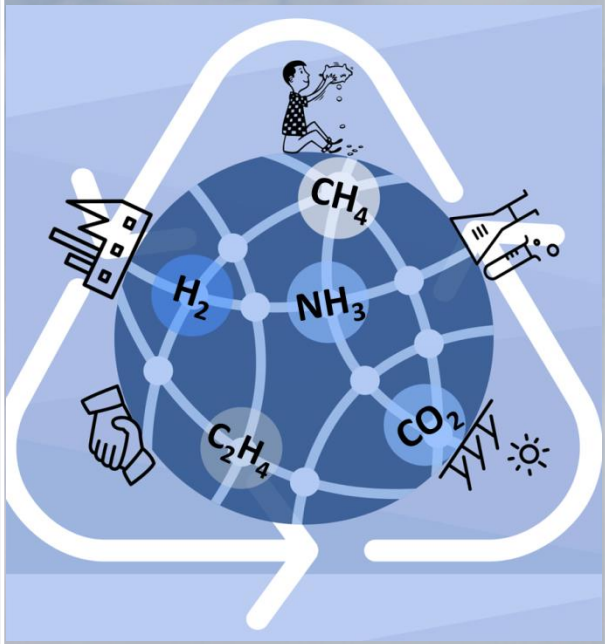
chimica

UNIVERSITÀ DEGLI STUDI DI TORINO

CPE LYON ÉCOLE SUPÉRIEURE DE CHIMIE PHYSIQUE ÉLECTRONIQUE DE LYON

Sustainable development Chair
French Engineering School
CPE –Lyon

INNOVATIVE CATALYSIS AND SUSTAINABILITY: scientific and socio-economic aspects



Palazzo delle feste – Giolitti room
BARDONECCHIA (ITALY)
7th – 11th January 2019

OBJECTIVES

Catalysis is "the current recognized most important and pervasive interdisciplinary technology in the chemical industry". Current chemical industry relies heavily on fossil fuels; and it does, so far, more for processing and related energy requirements, than as a carbon-based feedstock. The resulting social and economic impacts are enormous and not fully appreciated, both in terms of risks and opportunities.

In the current strive for a more renewable-energy driven society, the roadmap on catalysts development depends strongly on if and how the chemical industry can evolve to a REN-driven rather than fossil-fuel driven production.

The upcoming generation of researchers in catalysis will have to be trained and to operate the connection between the shifting techno-economic panorama of energy-related production systems and catalysis development challenges.

"What roadmap for catalysis addressing the chemistry-energy-economy nexus?"

This school proposes to set the basis for such an analysis, through the prism of 6 pivotal molecules that are at the roots of many current production processes:

- **Hydrogen**: REN-production and use;
- **Ammonia**: from fossil-based to fossil-free routes;
- **Methane:** direct conversion to methanol;
- **Olefins and biomass**: as carbon feedstock;
- **Carbon dioxide**: from waste to resource.

These molecules are the nodes of a network with significant environmental and social consequences. The school will explore this complex network, under the guide of scientists with a broad and interdisciplinary view of the field. Participants from the social sciences are encouraged.

LECTURERS

Adriano ZECCHINA	Università di Torino (I) Accademia dei Lincei
Francesca VALETTI	Università di Torino (I)
Truls NORBY	University of Oslo (N)
Ilenia ROSSETTI	Università di Milano (I)
Thoa Minh NGUYEN	HALDOR TOPSOE (DK)
Serena DE BEER	MPI CEC (D)
Massimo NICOLAZZI	Gasplus S.p.A. (I)
Stian SVELLE	University of Oslo (N)
Fabrizio CAVANI	Università di Bologna (I)
Elena GROPPO	Università di Torino (I)
Nicolaas FRIEDERICHS	SABIC (NL)
Thibaut CANTAT	CEA (F)
Andre BARDOW	University of Aachen (D)
Kazuiro TAKANABE	University of Tokyo (J)
Daniel CURULLA FERRÉ	Total (F)
Vincent ARTERO	Université Grenoble Alpes (F)

INTERDISCIPLINARY ACTIVITIES

- Bingo on the Periodic Table
- Team Contest on communication/dissemination skills
- LEGO® Seriosus Play® soft sfills workshop

HIGHLIGHTS

- Introductory lecture to set the scene: "The real and perceptual major needs we have now and in 30 years perspective" by A. Zecchina
- Lectures by international scientists
- Interdisciplinary lectures addressing the social sciences aspects of the chemical industry
- "Catalysis for non-chemists" support activities.
- Round table: "The role of catalysis in society" with invited members from major Editorial boards from Journals in the sustainability field.
- Free time every day for open-air activities

PROGRAMME

The 5-day school is organized in 6 modules. Each module, based on one of the identified pivotal routes at the basis of chemical production will provide three levels of analysis:

- overarching elements of techno-economic analysis
- current state-of-the art in catalytic production routes
- emerging knowledge-driven innovation in new REN-compatible catalysis.

TOPIC 1: HYDROGEN

Hydrogen production by water splitting.
Hydrogen-based economy.

TOPIC 2: AMMONIA

Industrial production of ammonia and the energy nexus.
Nitrogenase and bio-inspired catalysts.

TOPIC 3: METHANE & METHANOL

Direct conversion of methane to methanol: is it feasible?
Role of natural gas in the energy transition: resources and conflicts.

TOPIC 4: BIOMASS

Biomass catalytic conversion to chemicals, materials and fuels.
Production and market for biofuels in Europe and worldwide.

TOPIC 5: ETHYLENE

Polyolefin catalysis: is it a mature field of research?
Industrial outlook on the future of polyolefins.

TOPIC 6: CARBON DIOXIDE

Climate economics.
LCA & CO_2 catalysis.
Use of CO_2 in industrial processes.

TARGETED AUDIENCE

The School is addressed to master and Ph.D. students, post-doctoral fellows and young researchers with interest in the **chemical foundations of sustainability**, both **from a technical and social-economic perspective**. **Specific primers for non-chemists will be provided.**

Participants are encouraged to present papers covering their recent research activities. All the submitted papers will be presented as posters. All abstracts will be collected in a **Book of Abstracts**.