

Conference Report

SCS Seminar 2018/1: Catalysis Across Scales

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The Catalysis Section of the Swiss Chemical Society (SwissCat) has kicked off a new seminar cycle in the framework of the SCS Seminar series. The first of these recurring events, entitled ‘Catalysis Across Scales’

and organized by Prof. Javier Pérez-Ramírez, Prof. Christophe Copéret, Dr. Cecilia Mondelli, and Dr. Alexey Fedorov (ETH Zurich), and Dr. Hans P. Lüthi (SCS Foundation), was aimed at bringing together researchers from industry and academia engaged in heterogeneous, homogeneous, and bio-catalysis at all levels of technological development, from active site design to process engineering. Indeed, establishing a sound network of scientists active in this discipline and enhancing the awareness of the expertise and the resources available throughout Switzerland were conceived as the first steps necessary to foster collaboration and to shape the next generation of researchers active in the field.

Catalysis Across Scales brought 34 participants and 13 instructors to the City Oberland Hotel in Interlaken on June 13–16, 2018. Among the participants, as well as within the body of instructors, industry was well represented.

Program

The seminar program covered the catalysis field in its entirety and thus marked an excellent opportunity for scientists interested in various aspects of this discipline to broaden their knowledge and to get to know experts in the different sub-areas. Given the mix of presentations by industrial and academic researchers, the relevance of catalysis to both practical development and fundamental academic research was thoroughly addressed. Whereas the university students had the opportunity to achieve a better understanding of industrial catalysis (application in the production of platform and fine chemicals from small and large molecules and renewables, state-of-the-art technologies, engineering aspects, high-throughput experimentation, sustainability), the participants from industry got insight into the design of new catalytic systems in academic laboratories as well as into the development of novel screening and characterization methods, including theoretical approaches such as molecular



Organizers and instructors.

modelling and computer-aided search for active catalyst structures. Overall, the program had a much wider breadth than a typical catalysis course in an academic curriculum.

Sessions and Speakers

Session ‘Transformation of small molecules to key intermediates’: Dr. Alexey Fedorov, ETHZ; Prof. Xile Hu, EPFL; Prof. Núria López, ICIQ, Dr. Davide Ferri, PSI; Dr. Gerhard Mestl, Clariant.

Session ‘Conversion of renewables’: Dr. Cecilia Mondelli, ETHZ; Prof. Stavros Papadokonstantakis, Chalmers; Prof. Bert Sels, KU Leuven; Dr. Rocco Paciello, CaRLa-BASF; Dr. Denis Gribkov, Syngenta.

Session ‘Synthesis of complex molecules and materials’: Dr. Jonathan Medlock, DSM; Dr. Hans Iding, Roche; Prof. Rebecca Buller, ZHAW.

Participants

Affiliations of the 35 participants from academy (27 attendees and 8 speakers): ICIQ, Tarragona, Spain; ETH Zurich; PSI; University of Bern; University of Zurich; EPF Lausanne; HES-SO Fribourg; ZHAW, Wädenswil; ESRF, Grenoble, France; Chalmers University, Sweden; KU Leuven, Belgium

Affiliations of the 12 participants from industry (7 attendees and 5 speakers): Novartis; Syngenta; DSM; Ammonia Casale; ChemSpeed; F. Hoffmann-La Roche; BASF; Clariant, Germany; CaRLa-BASF, Germany.

Results

The participants were very actively involved in the program: each lecture was followed by an extensive, 15 minutes discussion moderated by the session chair.



The two presenters of the winning team.

As an important addition to the traditional lecture format, five teams of participants were formed to work on practical challenges in frontier topics in catalysis, coached by the instructors. Given the high level of engagement of the participants, group discussions were continued even after the time officially dedicated to this activity. The outcome of the

team work was shared in short presentations. Some of these short communications were absolutely remarkable: they presented an excellent content (*i.e.*, a feasible solution to the problem posed) in a very creative way to lock the attention of the audience and to receive optimal feedback. All groups received an award sponsored by Interlaken Tourism; the winning group had first choice at the prize table.

Topics of the team work:

1. Single site catalysis
2. Catalyst scale up and scale down
3. High-throughput experimentation
4. Abundant metals in catalysis
5. Catalysis and the energy challenge

Outlook and Acknowledgments

The seminar format turned out to be excellent to achieve the goals set and to make a success of the first event organized by SwissCat. The very positive feedback of the audience consolidated

the intention of SwissCat to continue with the seminar series, which will be directed to new, thematically more closely focused topics within catalysis. The generous support of the sponsors was another source of reassurance. We encourage you to visit the meeting website (<https://sem18-1.chemistrycongresses.ch/en>), where you can find more detail about the seminar and our sponsors, as well as more meeting pictures.