

Europacat 2017, 13th European Congress on Catalysis

“Catalysis – A Bridge to the Future”

27.08. – 31.08.2017, Florence, Italy

The Europacat is one of the biggest European conferences on catalysis. Expressed by the theme “a bridge to the future”, the congress served as a platform for offering both the state-of-the-art on catalysis research and the perspective of current trends and opportunities for catalysis in the next years. The German Catalysis Society (GeCatS) supported the international exchange of ten young scientists in the versatile disciplines of catalysis. By this way, us young researchers were given the opportunity to present and discuss our research with a broad community of scientists either through oral presentations or poster presentations. This occasion gave us the great opportunity to make valuable networking and go in contact with researchers from the entire world.

Florence as the venue, a city of arts and cultural heritage, was a perfect decision. The congress center was located within 5-10min walking distance from the city center and at the congress area many places were allocated to sit together to discuss science and projects. Beside the scientific program, Florence gave us the opportunity to breathe the typical Mediterranean and vacation-like atmosphere and feel the gothic and renaissance ambience.

The conference program was consisted of different topics like “Catalysis for a cleaner and sustainable future”, “Addressing catalysis complexity”, “Industrial catalysis”, “Expanding catalysis concepts” and different more, which were pointed out by five plenary lectures, 22 keynote lectures, over 500 other presentations as well as 900 posters from over 1700 participants. General trends in the field of heterogeneous catalysis related to environmental aspects became evident. The efficient activation and direct conversion of CO₂ into CO, acetic acid, methane or methanol is a current challenge and widely discussed in numerous sessions. Furthermore, the fundamental understanding of catalysis was focused by several theoretical approaches like presented by the Young Researcher EFCATS awarded A. Vojvodic (USA) or the F. Gault awarded J. Sauer as well as by *in-situ/in-operando* techniques, like highlighted in the talk “Probing surface catalysis in real time” given by A. Nilsson from Sweden.

Fabian Joschka Holzhäuser – RWTH Aachen, Lehrstuhl für Heterogene Katalyse und Technische Chemie, Aachen

In my PhD project, I am mainly working in the field of electrocatalyst synthesis and electrocatalytic conversion of biomass to fuels and value-added chemicals. Thus, poster presentations like the selective synthesis of DFF by electrooxidation of HMF presented by D. Smirnova or the base-free oxidation of HMF with nanosized NiO catalysts by D. Bonincontro attracted my attention. Also the keynote lecture about nano(bio)catalytic processes for the production of biofuels and chemicals by Professor Luque provided me with new ideas and knowledge for my project. In addition, I could as well present my own results about the electrocatalytic conversion of itaconic acid in the second poster session. Apart from that, oral presentations about the electrochemical and conventional reuse of carbon dioxide to alcohols and aldehydes were especially interesting for me.



The whole scientific part of this journey was greatly supported by the beautiful location of the conference building and gave us an excellent opportunity to network and make new valuable contacts for possible further collaborations. Only a few steps away from the building one could enjoy the “dolce vita” of Florence, Italy. The historic sites in connection with the outstanding Italian food made this trip unforgettable.

Dr. Roman Goy - DSM Nutritional Products GmbH, Process R&D, Basel

Since the topic of my PostDoc is the development of catalytic coatings for metallic structured reactors dealing with palladium impregnated mixed metal oxide surfaces, especially the talks about *in-operando* studies on such catalysts provided my understanding, like the EXAFS study of Pd-leaching from solid catalysts presented by D. Ferri. I was fortunate to have a short oral presentation in the session “Industrial catalysis-1”. Since my PostDoc was completed in July 2017, this was an excellent possibility to present the results of my project of the last two years.



Furthermore, I was interested in topics related to water-splitting and photocatalysis due to its close connection to my PhD work as well as in the development of catalysts for pure organic synthesis. The extensive poster sessions with overall 900 posters were impressive, covering a wide scope of nearly every topic. After the scientific discussions, it was great to discover Florence and to enjoy the Mediterranean kitchen.

Melanie Iwanow – Fraunhofer IGB, Straubing branch, Bio, Electro and Chemocatalysis BioCat and University of Regensburg, Chair of Prof. König

The topic of my PhD thesis is the preparation of supported metal catalysts. We developed a new method using deep eutectic solvents (DESs) as starting materials. These mixtures serve as solvent and carbon source simultaneously. After pyrolysis of the metal compound dissolved in the DES, the active metal on carbon catalyst is produced in one step.



I got the opportunity to present the current status of my project at a poster session, where I had some really interesting and helpful discussions. At the conference, I was especially interested in methods of catalyst characterization. The plenary lecture of S. Bordiga, for example, was a great presentation for that topic, as the challenges in the catalyst characterization by spectroscopies were mentioned. Moreover, this conference was a great chance to make new contacts and meet “old” friends again for an interesting scientific discussion, a typical Italian pizza or a sightseeing trip to the beautiful places of Florence.

Marcus Kasprick - Institut für Technische Chemie, Universität Leipzig

The Topic of my Ph.D. is the development of catalysts for low-temperature NH_3 -SCR of NO. Since this topic was discussed in many oral presentations in several sessions as well as various poster presentations, for me it was a fantastic opportunity to get in contact with other people, who do research in the field of SCR, and discuss the current developments and research results. I had also a poster presentation where I had interesting talks with other SCR-researchers.

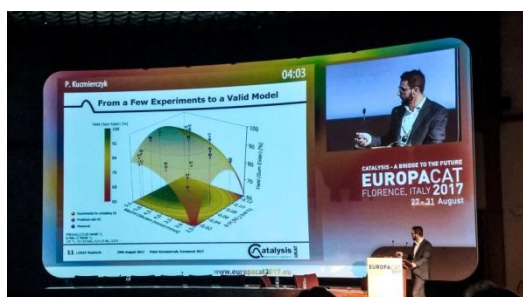


On other conferences, the SCR-topic is only represented in minor. However, on the EuropaCat it was a highly discussed topic, so it was somewhat unique to meet such a huge SCR-community. It was also great to see the presentations of people that I knew only from their various papers.

On the EuropaCat were many interesting presentations that gave me a superior insight not only in the SCR-topic but also in other fields of catalysis. For example, the presentation of W. Ueda, who presented a new zeolite-like POM-material, which is porous and redox-active. Also the presentation of S.W.T Price was pretty interesting. He presented a tomography-XRD analysis method, which can reveal the distribution of specific material-features within the particle.

Peter Kucmierczyk - Leibniz Institute for Catalysis, Applied Homogeneous Catalysis, Rostock

The topic of my doctoral thesis is strongly related to the industrial application of homogenous catalysts based on Palladium containing systems. The objective of the Europacat is to combine fundamental research and industrial application of diverse catalytic systems and to build "A Bridge to the Future". Especially A. Corma was able to underline the importance of close collaboration of specialists of different fields apply efficiently heterogeneous catalysts in industrial scale beginning with the concept via proof of principle to finale scale up. Moreover, the presentations of catalytic systems with the wide variety gave me the opportunity to extend my knowledge besides my own research field and to meet the respective specialists. Of particular interest was to see the progress of *in-situ* kinetical studies and characterization of catalyst. SW. Bordiga presented in an impressive way the efficiency of *operando* spectroscopic methodologies.



To be chosen to present my recent investigation during a 15-minute oral in the auditorium of the Palazzo dei Congressi was an honor for me. It was an impressive feeling and a unique possibility to explain the first outcomes of the research as doctoral candidate. Particularly, the questions of the auditorium

encouraged me to follow my research approach and gave me useful hints for my future work.

Not just the beautifully landscaped garden of the Palazzo dei Congressi, but also Florence with its winding streets and historic buildings create a supportive environment for exchange of ambitious researchers from all over the world.

Thomas Stiegler -Institute of Chemical Reaction Engineering, FAU Erlangen

For me the Europacat was the first conference I participated in. I was impressed by the size of this conference and the well-organized arrangement of the different topics on catalysis. It was a great opportunity to present a poster about the results of my master thesis which was about the electrophoretic deposition of boehmite on periodic open cell structures. I enjoyed contributing my results to such a huge community and receive others' opinions on it. The Europacat was also a great chance to get to know many other scientists working on similar and completely different topics. The beautiful city of Florence was definitely a great venue for my first conference.



Dennis Vogelsang – Chair of Technical Chemistry, Department of Bio- and Chemical Engineering at the Technical University of Dortmund

With 1700 participants from over 55 countries, the EuropaCat was a fruitful basis to discuss with the chemists from all over the world about recent developments and novel approaches in understanding catalysis and how to design the most suitable catalyst for individual applications. Especially, the number of 600 student attendees represents that even for Ph.D. students the EuropaCat was a great chance to get in contact with other scientists and to present their own research topic.



The high number of more than 250 oral presentations and over 800 poster presentations was overwhelming and reflecting the vast amount of contributions in all major sections of catalysis. It is almost impossible to sum up the broad variety of advances in catalysis in a few words.



However, one aspect of research was frequently drawn out and consequently remained as an appeal in my mind. Research, especially catalysis, is a highly interdisciplinary topic and as many research groups as possible need to interact to build the bridge to the future. All in all, attending the EuropaCat17 conference gave me the great opportunity to get new insights in recent developments of catalysis and to discover Florence, which is one of the most beautiful cities in the world that I have seen until now.

Nina Sharmen Genz - Technical University Berlin

As a PhD student in my second year of research on solid-state analytics, participating in this international conference was an impressive experience. In addition to exchanging knowledge and discussing with other young scientists and international researchers, I had the opportunity to present my latest research during the poster session on the fifth day of the Europacat. The focus of my research is the synthesis and characterization of supported iron oxidic species on high surface support material SBA-15 as model catalysts for selective oxidation of propene. Deducing reliable structure-activity correlations by applying a multitude of analyzing methods constitutes a major aim of my research. Therefore, amongst others the thematic symposia from B. Weckhuysen, as well as the plenary lecture from S. Bordiga, concerning the application of tip-enhanced optical spectroscopy in nanoscale characterization of catalytic activity and the catalysts characterization challenges with spectroscopies, were especially valuable and



impressive for me. The Europacat offered an enormous scientific program with many interesting presentations, that sometimes it was hard to choose which presentation to attend. To put it in a nutshell, it was a great experience to combine the high scientific level of the Europacat with the beautiful city Florence and the chianti region.

Martin Dilla - Max Planck Institute for Chemical Energy Conversion, Mülheim/Ruhr

The participation in the Europacat 2017 in Florence was a great opportunity for me to gain insight to various research fields in catalysis in form of talks, short oral talks and poster sessions. It was very rewarding to have inspiring discussions with international experts on my own research topic, the photocatalytic CO₂ reduction. Especially the contributions from numerous other groups in this research field gave me the chance to realize where they have set their main focus, to classify my own research in terms of scope, comprehensiveness and actuality and to identify possibilities for future collaborations and scientific exchange. It became clearer to me which questions in photocatalysis need to be answered to make a useful contribution to the scientific community. On the second day of the conference I had the honor to present selected results of my PhD studies in form of a short oral presentation. It was a great experience to present the conclusions of my investigations to scientists from all over the world. The discussion at the end of the session led to a fruitful conversation about crucial and detailed issues of my research. Overall, it was a nice decision of the organizing committee to give a large number of scientists the possibility to present their results as a short talk. A further impressive experience was an excursion to the city of Florence. The Italian flair and the delicious food were magnificent. A personal highlight was the visit of the cathedral and a tour on top of the dome, where it was possible to get a panoramic view of the whole city. Altogether the great experience of the conference and the city of Florence were perfected by sunny days. I am deeply grateful that the German Catalysis Society gave me the chance to visit this conference. It was a great opportunity for me to enlarge the scope of my research, get to know other scientists, discuss recent results and find new partners for future cooperation.



Samira Parishan - Technical University of Berlin

Europacat was a great opportunity for me to get more information on the latest breakthroughs in the field of my Ph.D. study, direct utilization of methane to value-added products. Among all, I was impressed by the plenary lecture of J. Sauer who showed nicely how the DFT calculations alongside the experimental investigations enhance and in some cases correct our understanding of the behavior of the selective oxidation reactions. Some other presentation like those from R. Palkovits, Z. Liu, E. Kondratenko, and L. Lefferts were quite inspiring for me. Besides, I also got the opportunity to shortly present my research in the session "Methane valorization".



The various social activities and communication possibilities which were offered during the conference helped me to easily do networking and go in contact with several scientists from the whole world. Among those, I want to specifically name C. Carreo, the Professor at Auburn University, who generously sat and discussed my last manuscript with me for hours during his few busy staying days in Florence.

Our great thanks go to the Deutsche Gesellschaft für Katalyse, especially to the “YounGeCatS” for giving us the opportunity to attend the 13th European Congress on Catalysis in Florence this year. Once again, the participation in this conference gave the affirmation that catalysis is still a pioneering issue in academia and industries. In this respect, the organizing committee appropriately subtitled the conference as “Catalysis – A bridge to the future”.

