

Editorial



Gábor Laurenczy

Catalysis is the science of controlling reactivity on a molecular level. Therefore it is one of the most valuable tools to accelerate chemical reactions and to direct selectivity. Catalysts ensure that reactions proceed with high efficiency, high yield, and avoid unwanted by-products. Importantly, they often allow for a more economical production compared to classical stoichiometric procedures. Over the course of their synthesis more than 80 percent of all chemical products come into contact with catalysts, thus catalysts are indispensable for the needs of today's society. Consequently, they are a key factor to sustainability and profitability of chemical production processes. It is believed that 15 to 20 percent of the economies of the developed western nations rely directly or indirectly on catalytic processes. Thus, it is not surprising that without catalysis many of the things we take for granted in daily life – gasoline or plastics, dyes and clothing, automobiles or computers, medicines or cosmetics – would be either impossible or suffer in quality.



Matthias Beller

Hence, it is undeniable that research on new catalysts creates significant economic potential. However, to exploit this potential and to realize new applications, it is vital to perform also science at a high level in academic institutions and to continue to develop here specific tools and methodologies for our basic understanding.

In this respect, we have gathered in the present issue of CHIMIA contributions from different European countries and Japan which focus on the catalytic activation and valorisation of small molecules. This timely field is intensively studied all over the world by scientists from both industry and academia. It is vital for the implementation of a sustainable and green chemistry. Apart from individual research projects more and more also joint research actions such as the European COST Action CARISMA directly work in this relevant field. Selected examples from this important field presented in this issue are reactions of carbon dioxide, water oxidation, and hydrogen generation. Are these studies important, or in other words, are these processes actually typical and are they relevant for our future? The answer is an almost unqualified YES and the reader is invited to have a closer look at the science described. Finally, we would like to thank all of the contributors of this issue as well as the editorial staff at CHIMIA.

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