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Preface

Carbon is particularly well known in catalysis in two contexts: one is due to the "coking" process leading to catalyst deactivation, and the other associated with its use as catalyst supports. Several industrial catalysts (e.g., for hydrogenation) are based on noble metals (mono- or bimetallic) deposited on activated carbon. The development of nanostructured carbons has opened new perspectives for their use in catalysis since these materials allow the hierarchical organization and tailoring when used as catalysts and supports, as well as the tuning of catalytic properties of the supported active elements.

In the latter case, research is devoted to the type and nanostructure of carbon, degree of graphitization, surface properties and doping with foreign elements such as N and B. In this way, it is possible to tune not only the properties of support, but also those of supported catalytic particles. In addition, there are a number of areas, for example electro- and photo-catalysis, where the conductivity of nanostructured carbon materials plays a relevant role. Carbon in all its allotropes is investigated as a metal-free catalyst, in contrast to traditional metal-containing catalysts. This is a relatively young research area with interesting applicative relevance.

The area of carbon for catalysis is a field that is growing from both fundamental and application perspectives, and there is thus a need for discussions to identify new directions for R&D and opportunities for exploitation of the results. This was the objective and motivation of the symposium series *Carbon for Catalysis* which covered the topics of functionalization, characterization (microscopic and spectroscopic) and applications in catalysis. There are also some contiguous areas, such as nanocarbon materials for Li-batteries or superconductors, which even if not truly catalytic materials, were discussed in part during the symposium, because of commonalities with nanostructured catalytic carbons.

The CarboCat-III symposium in Berlin (2008) was the successor of the CarboCat-I in Lausanne (2004) and CarboCat-II, in St. Petersburg (2006). There were 12 invited talks from internationally renowned experts in the field, together with 20 oral and 80 poster presentations. This special issue in *Catalysis Today* includes a selection of peer-reviewed papers from the conference. These representative papers provide an overview of state of the art of carbon in catalysis, identifying basics challenges and new trend in this important research area. The reader will thus find numerous hints and suggestions for use of novel carbon materials in new and creative ways. We are firmly convinced that this field of activity is becoming an increasingly relevant and important autonomous subject in heterogeneous catalysis.

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