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FOREWORD

Catalysis for Sustainability

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Currently, sustainability is a topic that attracts attention in many different areas of science and technology, and the term is possibly already being used so extensively and in so many contexts that it will eventually be devaluated in significance. However, there are probably few areas where sustainability is as important as it is in chemistry and chemical technology. Here, the term could undoubtedly be a useful indicator to secure that a responsible attitude is constantly developing among chemists and engineers in continuous accordance with societal needs; and it can also be envisaged to be of significant importance in making chemistry attractive to the younger generations in the future. In order for sustainable chemistry to be a meaningful term that can be a valuable guideline for future developments, it is desirable to use a common definition of this field. The simplest possible way to establish such a definition is probably to build on the widely accepted definition of sustainable development introduced by the Brundtland Commission. Thus, sustainable chemistry can be defined as "chemistry that contributes to securing the needs of the present without compromising the ability of future generations to meet their own needs". Accordingly, sustainable chemistry addresses an intimate interplay between societal, environmental and economical factors, and these factors can be considered the three dimensions of sustainable chemistry. Sustainable chemistry therefore reaches beyond just finding solutions that are environmentally attractive, they must also be able to achieve societal acceptance and at the same time be economically viable. This is the real challenge for chemistry. It is actually easy to discover and develop chemistry and chemical technologies that can potentially contribute to solving a given problem in one or possibly even two of the dimensions of sustainability. Clearly, it is difficult to predict what type of chemistry will turn out to be sustainable in the longer perspective but research and development in the field of sustainable chemistry is characterized by a strive to find solutions that simultaneously take all three dimensions of sustainability into account.

The present volume of Topics in Catalysis is devoted to catalysis for sustainability. Since catalysis can be considered the heart of the chemical industry, it is obvious that catalysis is a central theme in sustainable chemistry, and here numerous examples are collected that demonstrate how catalysis can play a role in providing new routes to fuels, base chemicals and fine chemicals, and how catalysis can play a role in preventing pollution but also in remediation. Thus, the discovery and development of sustainable chemistry will to a large extent rely on continuous, original contributions in the field of catalysis.

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