# Preface

The world population is increasing dramatically; fossil fuels are finite, and farmland as well as pastureland is limited or even declining. Therefore, the question of how to supply mankind not just with raw materials, fuels and energy, but also with food has been a topic of importance to the scientific community for a long time. The discussion has even intensified since "The Limits to Growth" was published by the Club of Rome, since climate conferences (Montreal 2005 etc.) have taken place, and especially since Germany's nuclear power phase-out.

The pioneer of petrochemistry in research and teaching, Friedrich Asinger from RWTH in Aachen, Germany, very early drew attention on to the waste of fossil fuels and proposed alternative concepts to secure raw material supply for the chemical and energy industry. In his book, published in 1986, he recommended methanol as a suitable basic chemical that can be easily stored and used as fuel or a fuel additive, as well as a chemical or energy raw material. He worked on this book without any help. He searched for, found and selected (and commented on) every citation completely on his own. With his book's subtitle "The Mobilisation of Coal" he indicated a medium-term solution—doing without oil and gas as fuels in the shortest possible timeframe. He also developed visions for a time after coal, oil and gas.

When all fossil fuel sources are exhausted, only $CO_2$ will be left (in the atmosphere and in the oceans) and—up to a point—Biomass.

Because Asinger's book is out of print and has never been translated into English, and because the issue of methanol as a chemical and energy feedstock is—now more than ever—a "hot topic", the time for a new book (in memory of Asinger, in a broad sense) has come.

Heribert Offermanns, a former student and assistant to Friedrich Asinger, took the initiative to gather a team of five editors—four of them with industrial experience and one who is professor at Freiberg University of Mining and Technology—with the aim of publishing a second revised edition that comprehensively documents the latest state of development in the field of methanol generation and usage. Also playing an active part in authoring this book, the editors succeeded in finding 46 well known experts from industry, academia and governmental research facilities as authors for the new edition.

The book is divided into a general and a more specific part. The general part begins with Asinger's vita, a short history of methanol and its present importance, as well as visions for the future beyond oil and gas: "Fossil Raw Materials—What Comes Next?" by Willi Keim, Aachen and "Technical Photosynthesis" by Franz X. Effenberger, Stuttgart. The extensive specific part, with contributions from the respective experts, provides information on the raw materials and their conditioning for methanol synthesis, as well as methanol synthesis itself. New topics include the physical and toxicological properties and issues of transport and storage. Methanol use as fuel and energy feedstock is addressed, as is its potential as an oil and gas substitute and as chemical feedstock. The book comprises eight chapters, and the number of literature citations exceeds 3,000. In particular, Chap. 4 (dealing with methanol feedstock and its conditioning) and Chap. 6 (methanol use) were substantially extended in comparison to the "old" Asinger. Of special value is access to the 1,400 references of the "Asinger" of 1986.

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