

Preface

Advances in clean fuel technology and control of atmospheric emissions

Driven by environmental incentives, advances are continuing to be made in the synthesis of reformulated gasoline. In the United States, this is required by the Clean Air Act Amendment of 1990. Of special note is the improved technology for the production of olefins and for subsequent olefin alkylation in refineries. The latter process utilizes improved strong acid solid catalysts.

Methyl tertiarybutyl ether (MTBE) has been one of the fastest growing chemicals in the world during the last decade. However, present concerns over the impact of MTBE on health and safety drives a renewed interest in other oxygenates that can be used as fuels or additives, including methanol, higher alcohols, and dimethylether. To achieve more economic syntheses of oxygenates such as higher alcohols and ethers, new or improved catalysts are needed that enhance productivity and/or selectivity. Another approach to obtain methanol is to bypass the expensive steam reforming step that forms synthesis gas, i.e. to directly convert methane to methanol by selective partial oxidation.

While significant progress has been made in controlling pollutants such as nitric oxide from automobiles and sulfur dioxide from certain stationary sources, large improvements are needed in reducing the emission of NO_x from large point sources such as electrical power plants and emissions from diesel-powered vehicles. Again, in the United States this is in part

driven by legislated requirements, e.g. NO_x emissions from electric utilities must be further reduced by 2003. Improved, more versatile catalysts are needed to achieve the required abatement level.

The Symposium on Environmental Catalysis was held at the Fifth Chemical Congress of North America in Cancún, Mexico to review recent advancements made in the areas of clean fuel technology and abatement of emissions generated by fuel synthesis or utilization and to discuss further research frontiers. The papers presented herein represent part of those presented at the symposium.

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