

Introduction

This collection of review articles aims to explore current and future topics of interest to C_1 chemistry. Recently a number of subjects have assumed great importance to those interested in C_1 chemistry in general as well as the bigger environmental picture of emissions and global warming. It is these topics that are reviewed in this issue. Throughout 1994 the oil price has remained relatively soft but at the time of writing the movement of large numbers of military forces in the Gulf area has once again become a major news item. Such activity only serves to underpin the geopolitical importance of oil and in particular the Gulf region. Against this background, we consider that a series of reviews on C_1 chemistry is timely and has renewed relevance.

This is the fifth in the series of reviews devoted to synfuels, the previous issues ("Synfuels", Catal. Today, 6 (1990)183–372; " C_1 Conversion: New Technology", Catal. Today, 8 (1991)277–394; "Fuel Extenders and Additives", Catal. Today, 15 (1992)1–176; "Fuels and Feedstocks", Catal. Today, 18 (1990)303–528) have dealt with many topics related to C_1 chemistry in considerable detail. The current issue is intended to address topics not covered before.

The first review concerns the production of synthesis gas ($CO + H_2$) from the partial oxidation of methane. There have been a number of invigorating new research approaches to this topic and these are discussed by the Oxford research group which has made valuable contributions to this field.

With the commercialisation of the Shell Middle Distillate Synthesis (see Catal. Today, 8 (1991)

371–394) the topic of Fisher–Tropsch synthesis has seen a renaissance. The most recent developments in this field have originated from the team that is most often associated with this topic, i.e. Sasol Technology. These developments concern the commercialisation of the slurry bed reactor using an iron catalyst and are reviewed in the second article in this collection. This represents the first publication concerning this new development.

The water gas shift reaction has been used commercially for many years. New catalytic materials for this reaction are always of interest and the third review in this series concerns the use of Raney copper catalysts for both the water gas shift reaction and the closely associated methanol synthesis reaction. This represents the first major review on this interesting topic. The fourth review in this issue critically assesses the body of experimental data available for the water gas shift reaction using both the conventional high iron based catalysts and the low temperature copper based catalysts.

The topic of how to use the ever growing supply of CO_2 is addressed in the fifth review in this issue. This article considers the availability of CO_2 for chemical production and the overall options for CO_2 utilisation.

It is hoped that this collection of reviews will add to the current interest in C_1 chemistry as well as stimulating new research approaches.

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