

raised, although oxygen stabilised the  $\text{-NCO}$  intermediate, retarding decomposition until 350K. Studies of ethylene adsorption on  $\text{Pt(III)}$  showed that the species on the surface changed with increasing temperature and a  $\text{CH}_3\text{C-}$  species was detected under certain conditions. Although both of these papers presented work carried out under conditions divorced from those used in real life, they nevertheless give a valuable insight into the processes occurring on precious metal surfaces. The adsorption of  $\text{-NCO}$  species on platinum is particularly relevant to vehicle exhaust catalysts since this has been implicated in ammonia formation on such catalysts under reducing conditions.

A detailed study of the adsorption and interaction of carbon monoxide and nitric oxide on rhodium/alumina catalysts was made by E. A. Hyde and R. Rudham of Nottingham University and C. H. Rochester of Dundee University. Using thermogravimetric analysis, hydrogen and carbon monoxide adsorption isotherms and infrared spectroscopy of adsorbed carbon monoxide it was found that rhodium/alumina samples prepared by reduction of rhodium(III) nitrate gave superior dispersions to those prepared from rhodium(III) sulphite or chloropentaamminerhodium(III) chloride. The spectroscopic results gave evidence of isocyanate ( $\text{-NCO}$ ) formation when carbon monoxide and nitric oxide were admitted to the catalyst, although the quantity varied according to the order in which the gases were admitted to the reactor. This work was

again relevant to vehicle exhaust catalysts and had formed part of a Science and Engineering Research Council CASE award sponsored by Johnson Matthey.

### Methanation Activity

A useful screening technique for determining relative activities of catalysts for the methanation reaction was described by I. J. Kitchener, C. Komodromos, C. W. Lam and N. D. Parkyns of the British Gas Corporation. This technique, known as Temperature Programmed Methanation, was used to study monolith supported nickel/alumina and ruthenium/alumina catalysts. Of the catalysts tested a co-precipitated nickel/alumina catalyst showed highest activity. Despite the inherent problems in this type of approach to catalyst activity testing, particularly with regard to accurate temperature monitoring, useful kinetic data were obtained from the results as well as information on relative activities.

Although few of the papers presented at the Rideal Conference described work directly relevant to the commercial applications of the platinum metals, it was encouraging that a significant amount of research is being undertaken with the aim of gaining a basic understanding of the mode of adsorption of gases on such metal surfaces and the mechanism of reactions between adsorbed species. The pioneering of new surface analytical techniques will undoubtedly produce benefits in the characterisation of platinum metal catalysts. L.S.

## The Chemistry of the Platinum Group Metals

Following the very successful meeting held in Bristol in 1981, a second international conference on this topic is to be held in Edinburgh from July 1-6, 1984, organised by the Royal Society of Chemistry. The chemistry of the six platinum group metals will be discussed in sessions devoted to aspects of photochemistry, electrochemistry, kinetics and mechanisms, industrial applications of thermochemistry, homogeneous and heterogeneous catalysis, and organometallic and cluster chemistry. In addition the use of platinum group metal compounds in organic synthesis and in medicine,

and current developments in physical techniques such as EXAFS, resonance Raman spectroscopy, and solid state NMR will be considered.

Among distinguished scientists who have already agreed to contribute are Bosnich, Brown, Calvert, Chatt, Clark, Drury, Fyfe, Graham, Halpern, Porter, Sheppard, and Werner; anyone wishing to contribute to the poster sessions, or to receive further information should contact the organising secretary, Dr. T. A. Stephenson, Department of Chemistry, University of Edinburgh, Scotland.