SCIENCE NEWS

THE SEVENTH NATIONAL SYMPOSIUM ON CATALYSIS

The 7th National Symposium on Catalysis was hosted by Indian Petrochemicals Corporation Limited (IPCL), during 6–8 February, 1985 at its research centre in Baroda. The theme of the symposium was "Recent advances in the science of catalysis and its technology". About 350 scientists and technologists representing several academic institutes, national laboratories and industrial research organisations in the country and 25 scientists from abroad (UK, USA, Japan, France, Holland, Belgium, Poland, USSR, Italy, Sweden and Hungary) participated in the symposium.

Shri J. S. Bakshi, Director (Finance) of IPCL while welcoming the delegates during the inaugural function mentioned that catalysis is a very relevant subject to IPCL, since almost all plants of the complex depend on at least one if not more catalysts. The company spends nearly, Rs.4 crores per annum on catalysts of various kinds. Besides, IPCL has a strong research division in their Research Centre working on applied and basic aspects of catalysis relevant to IPCL's operation. During the next few years, IPCL will be investing nearly Rs. 10 crores to set up facilities for evaluation and manufacture of catalysts on pilot scale. While emphasising the relevance of catalysis to IPCL as above, he also highlighted various contributions from IPCL's research centre in the area of catalysis.

Prof. J. C. Kuriacose, President of the Catalysis Society of India, outlined the growth of this society from its inception in 1973 and in his opening remarks expressed the society's gratitude to the management of IPCL for extending the facilities to hold the 7th National Symposium in their campus, which is the most befitting venue. He expressed great satisfaction about the interaction of industry with the activities of the society. Professor J. Haber, President-Elect of the Council of International Congress on Catalysis considered the catalytic oxidation of hydrocarbons on oxide catalysts. He classified all catalytic oxidation reactions into two simple categories, based on the participation of either electrophilic or nucleophilic oxygen species. In his attempt to rationalise the vast data available on oxidation reactions, he stressed the need for realising the dynamics of surface during reaction as well as the necessity to treat the surface processes as three phase systems involving gas, bi-dimensional surface region and the bulk solid.

The technical programme of the 3 days' symposium included six plenary lectures and nine technical sessions consisting of 40 oral and 55 poster presentations. Prof. Guczi, Head, Catalyst Research Group, Institute of Isotopes of the Hungarian Academy of Sciences gave a plenary lecture on "CO hydrogenation on Fe-Ru catalysts". In his lecture, he concentrated on the factors controlling the population of various surface species and the possibilities of interconverting them so as to optimise the hydrocarbon yields. The structure of catalysts and the possibilities of interaction in bimetallic systems were also delineated. Dr Ballard of ICI, England spoke on the use of model systems in comprehending the role of catalysts in synthesising polyolefins. He traced the evolution of organometallic chemistry and the production of polyethylene at low pressures, with exhaustive coverage of transition and non-transition metal alkyl catalysts used for this reaction. Dr P. G. Menon of the Chalmer's University, delivered a plenary lecture on 'Some contributions to the surface Chemistry of Platinum reforming catalysts'. This was a review of the work done by the speaker for the past fifteen years, dealing with (i) methods developed for the estimation of metal dispersions in bimetallic (Pt, Re) reforming catalysts, (ii) the controversy on the stoichiometry used for determining metal dispersions by gas titration and (iii) the effect of reduction treatment on the properties of the catalyst especially in the context of the concept of Strong Metal Support Interaction (SMSI). Prof. D. K. Chakrabarty of IIT, Bombay, in his plenary lecture outlined the basis and the application potential of XPS technique for catalysis research. He clearly brought out the importance of this technique in catalysis research. Prof. B. Delmon of the Universite Catholique de Louvain, Belgium, in his plenary lecture on "Approaches to the study of catalyst deactivation", focussed his attention on various aspects of deactivation. This well organised lecture on deactivation could form the basis for any further studies on this subject. Prof. J. C. Kuriacose of

IIT, Madras spoke on Catalytic reaction on illuminated semiconductor solids. He clearly brought home the differences between photo-catalytic and photo-assisted processes and showed how these processes can be used advantageously to harness solar energy.

Nine technical sessions covering various aspects of science & Technology of catalysis have been classified into broad groups like: theories, models and concepts in catalysis; transformation of principles of catalysis to practice; preparation, characterisation and evaluation of catalysts; role of catalysis in organic synthesis; applications of spectroscopy in catalysis; zeolite catalysis; catalyst deactivation and regeneration; photocatalysis; process optimisation, and homogeneous catalysis.

Papers presented in the poster sessions covered the following areas:

1. Preparation and characterization of catalysts especially mixed oxides and supported metal catalysts for Fischer-Tropsch and reforming processes.
2. Evaluation of activity and selectivity of catalysts like Charcoal, FeTi, Perovskite Oxides, CO-conversion catalysts.
3. Theories, models and concepts in catalysis dealing with the application of EHT method for cluster system and theoretical models for treatment of reactions in industrial fluid bed reactors.
4. Catalysis in organic synthesis – The papers in this section with catalytic conversion of isophorone to 3,5 xylenol, bromination of phthalic and sulphobenzoic anhydrides etc.
5. Zeolites in catalysis – The aspects covered by the posters concerning this topic included synthesis and characterization of high-silica pentasil, toluene disproportionation, methanol dehydration on molecular sieves and reforming of n-hexane over $Pt\text{-}Al_2O_3$ zeolite catalyst.
6. Homogeneous Catalysis – Typical posters presented in this section dealt with catalysis by metal clusters, reduction of aldimines by HCOOH, carbonylation of nitro aromatics by Pd and Phosphine complexes as catalysts and free radical polymerization by phase transfer catalysts.

All the papers presented in the symposium were brought out as a book edited by Dr T. S. R. Prasada Rao and published by Wiley Eastern Pvt. Ltd., New Delhi.

The valedictory function of the symposium was presided by Dr L. K. Doraiswamy, Director, National Chemical Laboratory, Pune, who in his concluding remarks brought out the effect of internal and external fields on catalysis and focused attention on the future trends in catalysis research.

T. S. R. PRASADA RAO
Research Centre,
Indian Petrochemicals Corporation Ltd.,
P.O. Petrochemicals,
Baroda 391 346.

MADRAS OBSERVATORY: THE BEGINNING

Madras Observatory – the precursor of the Kodaikanal Observatory and the Indian Institute of Astrophysics – was set up in 1786 as a private observatory by William Petrie, an officer of the British East India Company. The main aim of the observatory was to provide navigational assistance to the company ships, and to help determine longitudes and latitudes of the company territories. The observatory was handed over to the East India Company in 1789 when Petrie left for England on one of his periodic visits. Michael Topping was appointed the Astronomer (as the Director was then called) and John Goldingham the assistant Astronomer. Topping apart from being the astronomer was engaged in survey work for the Company, and Goldingham was concurrently the civil engineer.

For the first five years of its existence the whole of the observatory was confined to a part of the Astronomer's residence. Reference meridian with respect to which all the longitudes were estimated passed through a mark on the granite step of the library, set up in two rooms of the Astronomer's house.

Records of Captain Huddart's 1787 astronomical observatories, preserved at Royal Greenwich Observatory, explicitly refer to 'difference of meridians of Mr. Petries house at Madras and Greenwich.

In 1782 the observatory building was constructed on the banks of Cooum river, in Nungambakkam, near the Astronomer's residence. The construction was personally supervised by the assistant Astronomer, Goldingham, who described the ob-

servatory building in a manuscript volume (1793–94) (kept at the Indian Institute of Astrophysics) the first 10 and the last few pages of which have been missing. The Astronomer Topping's accounts have unfortunately not survived. The Goldingham manuscript being the only extant contemporary account, has led to the erroneous belief that the observatory was founded in 1792.

The original instruments of the observatory were donated by Petrie: (1) a sidereal clock by Shelton (2) 20" transit instrument by Stancliffe, (3) a quadrant by Bird, (4) three identical achromatic telescopes by Dolland, of $2\frac{3}{4}''$ aperture and $3\frac{1}{2}'$ focus. To these, Goldingham added a portable transit by Ramsden, and 12" diameter circular instrument (attazimuth) by Troughton.

Two papers by Goldingham published in 1822 in Philosophical transactions (pp 408–430; 431–436) refer to observations made as early as 1787, by Petrie, Topping, and Goldingham himself. But the 1787 observations are not the oldest on record. The oldest observations on record pertain to 1786, the year of the foundation of the observatory, and are recorded in the Manuscript Observations. On 1786 December 5, the longitude and latitude of Masulipatnam Fort Flagsleft was measured.

Thus 1782 is neither the year of setting up of the observatory (which happens to be 1786) nor the year of takeover by the East India Company (which is 1789). The observatory building was constructed in 1782; but even afterwards a part of astronomer's house continued to be used for official purposes.

The detailed paper by R. K. Kochhar of Indian Institute of Astrophysics, Bangalore will appear in the 1985 June issue of the *Bulletin of the Astronomical Society of India.*

ANNOUNCEMENTS

WORKSHOP ON ECODEVELOPMENT

Centre for Ecological Sciences, Indian Institute of Science, Field Station at Sirsi, District Uttara Kannada, November 20–December 3, 1985

This workshop will explore the conceptual as well as practical aspects of ecodevelopment with special reference to the Western Ghats. The topics covered will include enhancing the production and increasing the efficiency of use of plant biomass for meeting the needs of manure, fuel, fodder and shelter as well as developing non-conventional resources of energy. The emphasis would be on exposure to actual situation in the field.

This workshop is basically meant for Masters degree holders in Life sciences/Agricultural sciences teaching in Colleges and Universities in the Western Ghats region of Maharastra, Goa, Karnataka, Tamil Nadu and Kerala States. A few seats may be available for similarly qualified candidates working in research institutes, Botanical and Zoological Surveys and Voluntary Organizations. The total number of seats is 20. Some financial support for train/bus travel and board and lodging will be available to the participants.

Applications with biodata and reasons for attending this workshop along with the names of two referees should reach Prof. Madhav Gadgil, Convener, Centre for Ecological Sciences, Indian Institute of Science, Bangalore 560 012, on or before **1st September, 1985.**

SYMPOSIUM ON ENVIRONMENTAL POLLUTION AND BIOLOGICAL SYSTEMS

The Research Centre in Biology, Department of Zoology, S. G. S. Arts College, Tirupati (Andhra Pradesh) will be organising a UGC-sponsored 'Symposium on Developmental Pollution and Biological Systems' on 7–9 September, 1985 at Tirupati. The details regarding the sessions, themes and registration may be had from Prof. V. Chandrasekharam, Convener, Research Centre in Biology, Department of Zoology, S G. S. Arts College, Tirupati 517 501.
