phase separation characteristics, needing relatively few theoretical stages.

Process Development

Separation schemes for platinum group metal refining have been examined at bench and pilot plant scale for several feedstocks of interest. The development pilot plant programme had several objectives:

(a) To prove that the process technology would work on real solutions and could operate for an extended period.

(b) To generate design and scale-up data for the eventual production refinery.

(c) To examine long term effects such as solvent poisoning and circuit accumulation.

(d) To examine process yields, efficiencies, refining time and operating costs.

(e) To determine process flexibility with respect to feed-stocks, impurities, throughput, etc.

Significant quantities of platinum group metals were successfully processed during the pilot plant phase of the process.

Conclusions

Solvent extraction has a number of advantages over conventional precipitation processes. The research and development programme has shown that solvent extraction processes can give:

(i) Operational safety due to enclosure of platinum solutions, which have some allergenic properties.

(ii) Reduction of wet solids handling.

(iii) Improved primary yields and operating efficiencies.

(iv) Shortened pipeline times.

(v) Improved intermediate products.

(iv) Versatility.

The net result should, once capital investment has been made, give improvements to refinery operation and costs.

Following the research by Johnson Matthey and development with pilot plant operation of this process at the Matthey Rustenburg Refiners (UK) Limited, Royston Refinery, Matthey Rustenburg Refiners has recently announced its decision to erect a Solvex production refinery on the Royston site (5).

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Catalyst Systems for Exhaust Emission Control from Motor Vehicles, Past, Present and Future

The MacRobert Award lecture, with the above title, was given in London last month by Dr. G. J. K. Acres, who together with Dr. B. J. Cooper, Mr. B. S. Cooper, Dr. W. D. J. Evans and Dr. D. E. Webster, won the 1980 MacRobert Award for their contribution to the development of automotive catalyst systems by the Johnson Matthey Group (Platinum Metals Rev., 1981, 25, (1), 22).

In the 1960s the Inter-Industries Emission Control team, led by Ford and Mobil, defined the catalyst systems that would be required to meet proposed legislation in the U.S.A., and Johnson Matthey considered that catalysts based upon mixed platinum group metals could enable the necessary major advances in technology to be made.

Many of the improvements in activity, selectivity and durability that were made in platinum group metal catalysts for exhaust emission control, during the work that resulted in the MacRobert Award, have been reported here already. However Dr. Acres also considered topics that may be of great future use to the car industry. Two of these, namely the recent development of lead-tolerant catalyst systems and the greater control of diesel emissions, are planned to appear in future issues of this Journal.