

are not only looking to improve the quality of their product but also to achieve economies in production.

To these ends, the benefits which users of A.C.T.TM coatings should derive will include

improved reliability of the coated component, improved thermal shock resistance, reduced down times, and generally maintained or improved quality of the glass end product, with respect to both defects and to dimensional tolerances.

References

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Availability of Platinum, Palladium and Rhodium

In view of their widespread use in the automotive, chemical, electronic and petroleum industries the platinum metals are regarded as strategic materials in the United States of America. For this reason the U.S. Bureau of Mines collects and evaluates information relating to their availability and demand. A previous report from this organisation was published in 1982, based on data — from the so-called market economy countries — available up to 1980 (1). Since then major changes have occurred in the supply of these metals as the industry prepared to satisfy the increased demand expected to result from new anti-pollution legislation, particularly in countries of the European Community.

This earlier study has now been updated following a complete re-evaluation of resources, industry structure and costs (2). Based on 1989 data, the new report commences with an overview of supply and industrial demand for platinum, palladium and rhodium. A further section considers the resources, cost and economic factors that affect the availability of the platinum metals, and includes pricing and price proportion analysis, and availability analyses. Data are presented in a total of thirty-four figures and tables, and this main part of the report is supported by 106 references.

In an appendix, demand and uses for the platinum metals are summarised. Environmental uses are regarded as some of the most critical of the many industrial applications; demand for jewellery and investment are also considered. In other appendices the methodology employed in this study is explained, the major mining properties in Southern Africa and North America are described, and mining, treatment

and autocatalyst recycling processes are summarised briefly.

This most informative fifty-four page report is available without charge from: Chief, Branch of Minerals Availability; U.S. Bureau of Mines; 810 7th Street, NW; Washington, DC 20241-5202; U.S.A. For technical information, contact Catharine T. Fogg or Joseph L. Cornellison at the Minerals Availability Field Office; U.S. Bureau of Mines; Building 53, Denver Federal Center; Denver, CO 80225; U.S.A.

References

- 1 T. F. Anstett, D. I. Bleiwas and C. Sheng-Fogg, "Platinum Availability—Market Economy Countries", IC 8897, U.S. Bureau of Mines, Washington, 1982, 16pp
- 2 C. T. Fogg and J. L. Cornellison, "Availability of Platinum and Platinum-Group Metals", IC 9338, U.S. Bureau of Mines, Washington, 1993, 54pp

Ultra Micro Glutamate Sensor

Microbiosensors based on semiconductor fabrication technology are of the order of millimetres in size, but significantly smaller electrodes are required for insertion into the brain or nerve tissue. Now researchers in Japan have constructed an integrated ultra micro enzyme sensor with a 7 μm diameter platinised carbon fibre disc electrode and a platinum thin film counter electrode (E. Tamiya, Y. Sugiura, T. Takeuchi, M. Suzuki, I. Karube and A. Akiyama, *Sens. Actuators B*, 1993, 10, (3), 179–184).

The surface of the carbon fibre electrode was platinised electrochemically, which increased the electrode activity sufficient for the sensor to be used for the determination of glutamate, an important neurotransmitter.