could initiate the formation of a number of cracks at the grain boundaries, probably by a Stroh type mechanism (6), thus propagating intergranular failure. At the higher experimental temperatures it is suggested that this segregation does not occur, the distribution of the impurities remains random and a more ductile behaviour is observed. At the highest temperatures grain boundary movement occurs, and the fracture becomes entirely intergranular.

Conclusions

The tensile strength of iridium at high temperatures compares very favourably with that of the metals tungsten, molybdenum, tantalum and niobium. Of the common refractory metals only tungsten has a higher tensile strength above 1300°C and all of these metals are attacked to a much greater degree in atmospheres containing oxygen and carbon. Carbon vapour present in the furnace at high temperatures did not produce any change in the metallographic structure of the iridium.

The electrolytic etch using an alternating current and sodium hydroxide solution is most efficient, and may be usefully employed to reveal areas of high strain.

Iridium, unlike most other face-centred-cubic metals, exhibited a brittle-ductile transition and only moderate ductility at higher temperatures. Maximum ductility appeared to be within the range 1300 to 1800°C. The brittleness is considered to be due to grain boundary failure, possibly accelerated by coherent impurity segregation at these grain boundaries. It is also suggested that fracture is probably initiated by a Stroh pile up mechanism.

It is emphasised that these are no more than preliminary observations: more detailed work is in progress.

Acknowledgements

This work was carried out under the supervision of Dr F. P. Bowden, F.R.S., to whom the authors would like to express their thanks. They are also indebted to Johnson, Matthey & Co., Limited, for providing the iridium specimens and to Miss J. Horspool for assistance with the metallography.

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Catalytic Reforming in the U.S.S.R.

PRODUCTION OF AROMATIC HYDROCARBONS

Russian research workers engaged on the development of petroleum reforming processes using platinum-on-alumina catalysts have designed a plant to produce not only high-octane petrol, but also a range of aromatic hydrocarbons. Two types of reforming unit developed by workers from Lengiprogas are described in a recent paper (H. B. Aspel, G. C. Golov and V. D. Pokhozaev, *Khim. i Tekhnol. Topliv i Masel*, 1960, (5), 1–7). The basis for the differentiation is a change in operating pressure. By working at a pressure of 40 atmospheres it is possible to produce high-octane petrol and xylenes, while benzone and toluene are produced at 20 atmospheres. It is shown that, by modifying and expanding existing petroleum refineries, it is possible to construct multi-purpose catalytic reforming plants which may vary their products according to demand.