

iridium scrap have been picked-up during single crystal growth in crucibles and from iron-based apparatus used during the formation of these large crucibles.

After induction-oxidation melting iridium can be worked. The results of compression studies carried out at room temperature are given in Figure 1.

Samples cut from a coarse grained ingot produced by induction melting were also investigated. This material was cold worked into single crystals that were found to be strong, which may be due in some way to the increased concentration of elements such as oxygen and iron in the iridium.

## References

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## Protecting Tantalum by Platinum Implantation

Tantalum is a suitable material for use in corrosive environments, due to the formation of a dense highly resistant oxide film on its surface. In hot concentrated mineral acids, however, it is attacked and although the loss of material may be acceptable in some circumstances the associated electrochemical evolution of hydrogen can cause serious problems. Tantalum readily forms hydrides, which are brittle and therefore cause loss of mechanical strength which could, perhaps, result in component failure.

It is known that palladium and platinum can protect tantalum from embrittlement, it is also known that a titanium surface modified by ion implantation with an electrocatalytically active metal can be effective in reducing corrosion. Now a communication from the University of Heidelberg, Germany, reports the results of an investigation of tantalum following platinum ion implantation, and its effect on hydrogen embrittlement ("Electrocatalytic Protection

against Hydrogen Embrittlement of Tantalum in Strong Acids by Platinum Ion Implantation", W. Ensinger and G. K. Wolf, *Surf. Coat. Technol.*, 1992, 51, (1-3), 41-44).

Even a very small amount of platinum implanted in the surface of tantalum has a significant influence on the embrittlement by hydrogen, as determined by a mechanical bend test. Both the amount of platinum implanted, and the rate at which it was implanted had an effect on sample life; a low charging current and a high implantation dose being the most effective conditions. Implanted platinum reduces hydrogen adsorption electrochemically, it also decreases the entire corrosion process, including the cathodic hydrogen evolution reaction, and is effective for a long time in extremely corrosive environments, even though only a shallow layer of tantalum is modified. Thus tantalum implanted with platinum has greater scope as a constructional or protective material.

## The Chemistry of the Platinum Group Metals

The fifth International Conference on the Chemistry of the Platinum Group Metals will be held at the University of St. Andrews, Scotland, from 11th to 16th July, 1993. The conference will be organised by the Dalton Division of the Royal Society of Chemistry and provides an important opportunity for researchers in the field to meet and discuss recent developments.

Topics to be covered include applications of

platinum group metals in organic synthesis, materials science, biology and medicine; their electrochemistry; advances in homogeneous catalysis, co-ordination chemistry, clusters, particles and the solid state.

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