$(Et_3P)_2PtClH$ has been found to react with a diazonium salt in much the same way that a reducing enzyme is thought to react with a metal complex of molecular nitrogen in biological systems (13).

As will be seen from the reference list, this area of chemistry is currently of great interest and it seems clear that many other reactions of potential use in organic synthesis are as yet undiscovered.

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Palladium Addition Protects Titanium in Hot Concentrated Chloride Solutions

Titanium is used widely in the manufacture of chemical plant because of its natural resistance to corrosion by oxidants, such as boiling nitric acid, and its use has been extended to reducing conditions, such as with hydrochloric and sulphuric acids, by alloying small amounts of palladium to the titanium, a development due largely to Milton Stern and his colleague at Union Carbide (1, 2). The mechanism by which the addition of palladium affords protection to titanium has been described more recently in this journal by J. B. Cotton of Imperial Metal Industries (3).

Akira Takamura, working at the Central Research Laboratory of Kobe Steel Ltd in Japan, has now shown that the 0.13 per cent palladium-titanium alloy is almost completely free from corrosion by hot concentrated chloride solutions (4). Corrosion problems had been occurring in awkward angles and crevices of titanium heat exchanger tubes, pipe flanges and heater tubes used in circuits carrying, for example, hot copper chloride and ammonium chloride solutions.

Takamura carried out corrosion and electrochemical tests on coupons of titanium and the palladium-titanium alloy in six different boiling chloride solutions. Although the passivity of titanium was very stable in solutions of low chloride concentration it decreased with increasing chloride and hydrogen ion concentration. No corrosion of titanium occurred in neutral 25 per cent sodium chloride but severe corrosion soon occurred in acidic 33 per cent aluminium chloride solution. Pitting corrosion arose quickly in neutral solutions of 61 per cent calcium chloride and 86 per cent zinc chloride, depending on the surface condition of the specimens. Uniform attack took place after small additions of hydrochloric acid.

No corrosion was observed with the palladium-titanium alloy, the superiority of which is attributed to palladium enrichment at crevice surfaces and the consequent promotion of cathodic passivation. In consequence, equipment with joints and flanges likely to have crevices is now fabricated with the alloy, which has given more than three years successful commercial service.

F. J. S.

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