however, the effects, if any, on the performance of a resistojet should be evaluated.

The results indicated that platinum-yttria and platinum-zirconia are compatible with carbon dioxide, hydrogen, nitrogen, steam and methane under the conditions presented here. The reaction found in both materials at 1400°C when exposed to ammonia and decomposed hydrazine can be reduced by lowering the operating temperature. Both dispersion-strengthened platinums should be acceptable for space station resistojets using carbon dioxide, hydrogen, nitrogen, steam and methane. The propellants ammonia and hydrazine are also acceptable if the resistojet operating temperature is lowered.

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Fabricating Lithium Niobate Optical Wavelengths

One of the earliest uses of platinum was for the fabrication of crucibles to be used during chemical analysis, and over the years it has found application as a reliable containment material during many specialised processes, often under the most arduous conditions.

A recent communication from workers at the Universität Dortmund, West Germany, describes a new diffusion technique which is regarded as an important step towards the reproducible fabrication of low-loss titanium-diffused $LiNbO_3$ waveguides (A. Neyer and T. Pohlmann, *Electron. Lett.*, 1987, **23**, (22), 1187–1188).

During the fabrication of such waveguides precise control of substrate material stoichiometry, amount of deposited titanium and the diffusion conditions is required. The last are of paramount importance since the in-diffusion of titanium may be accompanied by an outdiffusion of LiO_2 from the $LiNbO_3$ crystal, resulting in an unwanted surface waveguide. This can now be avoided by containing the $LiNbO_3$ in a platinum box loosely closed with a platinum lid, during diffusion at a temperature of 1050°C.

The partial pressure of Li_2O built up in the small enclosed container is thought to prevent strong outdiffusion of Li_2O, but the main advantages of the platinum box are that it does not have to be stabilised by $LiNbO_3$ powder, it is not affected by Li_2O and it provides excellent temperature homogeneity.

Palladium Membrane Reactor

Although a reversible reaction can never be complete under ordinary conditions, if the products can be separated from the reacting mixtures the reaction should finally go to completion, and N. Itoh of the National Chemical Laboratory, Japan, has recently considered the decomposition of cyclohexane to benzene and hydrogen, using a platinum on alumina catalyst (*AIChE J.*, 1987, **33**, (9), 1576–1578). The hydrogen produced diffused out through the palladium wall of the reactor, and under the given conditions the conversion reached 99.7 per cent.