the complete removal of all other contaminants, but suffers the drawback of excessive cost. It was concluded that the final choice of gas purification for a PEM fuel cell system working on reformed methanol may well depend on as yet unanswered questions regarding the possible secondary effects of impurities such as unreacted methanol and carbon dioxide. It is possible that these gases may react on the anode to form catalyst poisons, such as carbon monoxide or formic acid.

A concept hybrid vehicle, consisting of a battery recharged by a fuel cell, running on reformed compressed natural gas was described in a paper presented by K. Ledjeff, J. Gieshoff and G. Schaumberg, of the Fraunhofer Institute for Solar Energy Systems, Freiburg, Germany. The reforming reaction is promoted by a platinum catalyst operating at around 650°C. The experimental reformer was designed to produce hydrogen at a rate of 700 litres/hour which must then be purified by a medium and low temperature shift, using iron and chromium oxide and copper and zinc oxide catalysts, respectively, before admission to the PEM fuel cell.

Conclusions

The papers presented at the Tenth World Hydrogen Energy Conference reflect the general environmental thrust towards a more hydrogen-rich energy environment. Whether as a change to hydrogen combustion for automobiles or by the introduction of platinum containing fuel cells, hydrogen will clearly be an important element in a more environmentally sound future. The unusual hydrogen storage, hydrogen permeating and catalytic properties of the rare earth metals and platinum group metals ensure their role in a hydrogen-rich future.

The Conference proceedings, edited by D. L. Block and T. N. Veziroglu, have been published on behalf of the International Association for Hydrogen Energy. The next conference will be held in Stuttgart in 1996. M.L.D.

High Temperature Platinum Selective Solar Surfaces

Spectrally selective coatings are used in solar collectors to concentrate the incident radiation. Their function is to enhance the operating efficiency of systems used for the production of electricity. These coatings have to be able to withstand high operating temperatures for long periods of time, and even higher temperatures for shorter times while the collectors are not in use.

Many materials and combinations of materials possess suitable optical properties and sufficient thermal stability for use at temperatures below 300°C. To improve the efficiencies of these systems, however, the coatings would be required to withstand significantly higher temperatures and few absorbers are stable in air at temperatures above 400°C.

For this reason researchers at the Universität Konstanz, Germany, have studied two systems, at temperatures up to 1000°C, for potential use as solar selective absorber surfaces, these being platinum on alumina and three molybdenum silicide modifications on alumina (J. H. Schön, G. Binder and E. Bucher, "Performance and Stability of Some New High-Temperature Selective Absorber Systems Based on Metal/Dielectric Multilayers", *Solar Energy Mater. Solar Cells*, 1994, **33**, (4), 403–416).

The optical properties of thin sputtered films of platinum on alumina were evaluated and found to agree with existing data. Thermal stabilities were tested for up to 400 hours at temperatures of 550 to 825°C. Platinum/alumina multilayers on quartz were stable in air up to approximately 700°C. The solar absorptance changed during a 300 hour experiment from $\alpha = 0.92$ to 0.90. On the actual metal used as a support in such collectors the coatings degraded faster, and at over 640°C the optical changes became more obvious.

Absorptances up to $\alpha = 0.95$ and emittances of $\varepsilon \sim 0.1$ were achieved for platinum/alumina, and the coatings are thermally stable in air up to 600°C for a 400 hour testing period.

Strain Gauge Materials

Please note that the following alterations should be made to one of the figures in the paper entitled "Noble Metals Alloys as Strain Gauge Materials", which appeared in *Platinum Metals Rev.*, 1994, **38**, (3), 98–108.

On page 106, in Figure 7, the data points have been displaced one position to the left. The density of state peaks should be at (d + s) numbers of 3, 5, 7 and 10, that is for Sc, V, Mn and Ni, respectively. Any confusion caused is regretted.