and compositions of palladium-platinum and palladium-silver alloys were interrelated in a contribution from F. A. Lewis (Queen's University of Belfast, U.K.) and K. Kandasamy (University of Jaffna, Sri Lanka).

Studies of pressure (p)-composition (c)-temperature (T) relationships in conjunction with relationships between hydrogen content and relative electrical resistance, R/R_0, were reported by A. K. M. Fazle Kibria, T. Kubota, A. Kagawa and Y. Sakamoto (Nagasaki University, Japan).

A new flat structured membrane, for the production of pure hydrogen, made from a palladium-indium-rhenium alloy, was recommended for use over a large temperature range (100 to 800°C). Reported by E. M. Chistov, V. M. Gryasnov, N. R. Roshan and D. I. Slovetsky (A. V. Topchiev Institute of Petrochemical Syntheses, Russia), the membrane displays resistance to corrosion over a wide range of hydrosulfurous and hydrocarbon atmospheres.

At the end of the conference, each participant was presented with a CD-ROM of the proceedings; however, it is also planned to publish selected contributions in a special issue of the *International Journal of Hydrogen Energy*. The next symposium in the series, HYPOTHESIS IV, will be held from 9th to 14th September 2001 in Stralsund, Germany. Fax: (+49-3831) 456-687; E-mail: hypotheses@fh-stralsund.de; URL: http://www.hypothesis.de/.

F. A. LEWIS

Intracellular Measurements by Pt/Ir Microelectrode

To study the behaviour of biological cells, it is necessary to investigate their electrophysiological properties. Cells display an electrical potential difference across their cell membrane which is extremely small, but is important to the cell. Positive current is said to cross the cell membrane from inside to outside and all cells have negative membrane potentials, typically of size ~ –80 mV.

Transmembrane potentials are conventionally measured using borosilicate or aluminium silicate glass micropipettes, the narrow tips of which can easily break or become clogged with air bubbles formed when the pipette is filled with electrolyte.

Now, researchers from laboratories in Switzerland have developed a new microelectrode for this purpose based on a sharp platinum/iridium needle (M. Schwank, U. Müller, R. Hauert, R. Rossi, M. Volkert and E. Wintermantel, *Sens. Actuators B, Chem.*, 1999, **56**, (1–2), 6–14).

Platinum-20 per cent iridium wire, 250 μm in diameter, was electrochemically etched in molten salt solution until the required high aspect ratio was obtained. The needles produced were uniformly shaped and slim, to minimise damage to the membrane cell, and have a typical radius of curvature of 300 nm. The needle was electrically insulated, except for the tip, by a thin film of hydrogenated amorphous carbon.

The tip of the needle was made into a conducting microelectrode of small radius of curvature, by transforming it using a scanning tunneling microscope working in a high pressure oxygen atmosphere. The high electrical resistance of the tip was successfully reduced. Penetration into cells by this conducting tip has to be smaller than the size of a cell, which is typically ~ 30 μm for a liver cell.

While there are disadvantages with this technique, such as slow response time and the measured potential of a biological cell differing from that measured conventionally, these microelectrodes have lateral resolution < 100 nm and improved mechanical properties.

Platinum Loss from Alloy Catalyst Gauzes in Nitric Acid Plants

In the April 1999 issue of *Platinum Metals Review*, on page 65, in Fig. 3, the caption should read "Dependence of the relative weight losses,..."; in the right hand column, the nineteenth line should read "relative platinum loss per cent for the three PPR#1"; and the twenty fourth and twenty fifth lines "3.95×10^{-4} per day for PPR#1 alloy gauze and 2.95×10^{-4} per day for PPR#2 alloy gauze", respectively. In Table III on page 66, omit "wt.%" from the fifth column headed $[Pt]:[Pt]_0$. On page 68, the equation should be "$2Pd + PtO_2 \rightarrow 2PdO + Pt$".

The Oxidation of Alcohols to Aldehydes or Ketones

In the July 1999 issue of *Platinum Metals Review*, on page 100, the second column in the Table should read "Stoichiometric oxidations, % conversion" and in that column, the twelfth line next to $(4\text{-Me-py})_2$ (in the first column) should read "30".