



Fig. 2 Relative performances of impregnated platinised electrodes of tantalum carbide, graphite and tungsten trioxide. Tested in 5N  $H_2SO_4$  at 30°C, 1 atm.  $H_2$ ,  $iR$  corrected.

The other two "control" electrodes suffered no loss in performance when tested for 24 hours, while the performance of the platinised  $WO_3$  electrodes dropped to half the original figure and continued to fall below that of the "control" electrodes after several days.

This problem was overcome by pre-treating electrodes in hydrogen at 250°C, when the

high initial performance could be maintained on repeated testing over a period of 3 days. The hydrogen treatment resulted in the tungsten trioxide becoming partially reduced, as shown by a permanent light blue colour.

Future work will be directed at determining the exact role of the oxide by using solid electrodes, and the factors affecting long-term performance.

#### References:

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## Platinum Furnaces in Lunar Rock Study

Among the studies to be carried out on the lunar samples brought back by the Apollo 11 astronauts is an investigation of their melting behaviour and of the nature of the crystalline phases in equilibrium with the liquid. This is being undertaken at the Grant Institute of Geology, University of Edinburgh, and involves the use of a bank of eight Johnson Matthey platinum-wound electric furnaces. Twelve samples at a time will be held in each furnace for periods varying from a few hours to thirty days at temperatures around 1500°C and will then be water-quenched to maintain the equilibrium conditions established. Samples can also be studied at very high pressures, ranging up to 40,000 atmospheres.

Interpretation of the results will be a complex process but valuable information is expected to be obtained on the conditions below the surface of the moon.

