

systems the significance in the correlations between their pressure-composition isothermals, in relation to hysteretic and critical point phenomena and also to magnetic parameters, was discussed in a contribution from I. Dugandzic and H. J. Bauer of the Physics Department, University of Munich. A particularly extensive discussion followed the presentation, by Baranowski, of a fresh quantitative explanation for the size of the hys-

teretic effects in pressure-composition relationships and associated thermodynamic parameters of the nickel-hydrogen, and particularly palladium-hydrogen, systems.

Contributions to the conference are planned to be published in the *International Journal of Hydrogen Energy* and it is anticipated that further conferences in the series will continue to take place on a biennial basis.

F.A.L.

Optically Readable Hydrogen Sensor Uses Palladium

A wide range of hydrogen-air compositions explode on ignition, and may cause serious accidents. To avoid such situations arising a variety of hydrogen sensors has been developed. At present, the hydrogen concentration in an atmosphere is usually measured by monitoring changes in an electrical property of the sensor as reaction with the hydrogen gas takes place. To enhance the sensitivity of such sensors it is necessary to maintain clean surfaces, and therefore they are generally heated to temperatures above 150°C. Thus there has been a need to develop an accurate hydrogen sensor which could operate at room temperature.

Researchers at Nagaoka University of Technology and at the University of Tokyo, Japan, had observed that the optical transmittance of palladium thin films depends strongly on the presence of hydrogen in the ambient atmosphere; now they have developed a hydrogen sensor which utilises this phenomenon and operates at room temperature. (Y.-S. Oh, J.-I. Hamagami, Y. Watanabe, M. Takata and H. Yanagida, *J. Ceram. Soc. Jpn.*, 1993, 101, (6), 618-620).

The sensor consists of a palladium thin film deposited on a glass substrate by radio-frequency magnetron sputtering. When a sample is exposed to hydrogen the optical transmittance to light of wavelength 780 nm increases and becomes saturated at a constant value, but on exposure to dry air the transmittance returns to its original value. It is reported that these reactions are perfectly reversible even after multiple repeats. For a thin film of specified thickness, the optical transmittance of the sensor was found to depend on the hydrogen concentration; with an increase in hydrogen concentration the relative change in transmittance increased, the response time decreased, and the recovery time increased.

This new optically readable palladium thin-film hydrogen sensor has excellent sensitivity and is compatible with fibre optics.

It is suggested that this novel palladium sensor may be selective only to hydrogen. Furthermore, the dependence of optical transmittance on the hydrogen concentration in the ambient atmosphere has also been observed for radio-frequency sputtered platinum films.

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Since 1980 the Institute of Precious Metals, Kunming, China, has been producing a quarterly scientific periodical entitled *Precious Metals*. Sponsored by the China National Nonferrous Metals Industry Corporation, the journal reports important research achievements in precious metals research in China. Publication is in Chinese, although English translations are given of the contents table, a brief abstract of each paper and associated key-words, and some figure captions. As may be deduced from the title, the journal covers gold and silver in addition to the six platinum group metals. The scope of the journal is somewhat

wider than that of *Platinum Metals Review*, in that the subject matter includes: exploration, mining and mineral dressing, extraction, separation, purification and analysis, and the recovery of precious metals from secondary resources. Also covered are measurements of physical properties, the use of precious metals and alloys by the chemical, dental, electronics and jewellery industries; and the study of precious metals chemicals, complexes and drugs. More information about *Precious Metals* may be obtained from the Precious Metals Editorial Panel, Institute of Precious Metals, Kunming, (650221), Yunnan, People's Republic of China.