

References

- 1 B. Harrison, B. J. Cooper and A. J. J. Wilkins, *Platinum Metals Rev.*, 1981, **25**, (1), 14
- 2 B. J. Cooper, *Platinum Metals Rev.*, 1983, **27**, (4), 146
- 3 B. J. Cooper, W. D. J. Evans and B. Harrison, in "Catalysis in Automotive Pollution Control", ed. A. Crucq and A. Frennet, Elsevier, 1987
- 4 J. S. Howitt, S.A.E. Paper No. 800082, 1980
- 5 C. A. Dulieu, W. D. J. Evans, R. J. Larbey, A. M. Verrall, A. J. J. Wilkins and J. H. Povey, S.A.E. Paper No. 770299, 1977
- 6 A. S. Pratt and J. S. Cairns, *Platinum Metals Rev.*, 1977, **21**, (3), 2
- 7 M. Nonnemann, S.A.E. Paper No. 850131, 1985
- 8 H. Schuster, J. Abthoff and C. Noller, S.A.E. Paper No. 852095, 1985
- 9 B. J. Cooper and L. Keck, S.A.E. Paper No. 800461, 1980
- 10 G. Kim, *Ind. Eng. Chem., Prod. Res. Dev.*, 1982, **21**, 267
- 11 E. C. Su, C. N. Montreuil and W. G. Rothschild, *Appl. Catal.*, 1985, **17**, 75
- 12 R. Gaugin, M. Graulier and D. Papee, *Adv. Chem. Ser.* 143, ed. J. E. McEvoy, A.C.S., Washington, D.C., 1975
- 13 H. C. Yao, H. K. Stepien and H. S. Gandhi, *J. Catal.*, 1980, **61**, 547
- 14 A. A. Tsgganenko and V. N. Filimonov, *J. Mol. Struct.*, 1973, **19**, (2), 579
- 15 H. C. Yao and Y. F. Yu Yao, *J. Catal.*, 1984, **86**, 254
- 16 G. Zakumbaeva, *Geterog. Katal.*, 1979, **4**, (1), 241
- 17 T. J. Truex, H. Windawi and P. C. Ellgen, S.A.E. Paper No. 872162, 1987
- 18 A. F. Diwell, C. Hallett and J. R. Taylor, S.A.E. Paper No. 872163, 1987
- 19 G. J. Barnes and J. C. Summers, S.A.E. Paper No. 750093, 1975
- 20 C. D. Wagner, M. W. Riggs, L. E. Davis, J. F. Moulder and G. E. Muilenberg (Editor), "Handbook of X-Ray Photoelectron Spectroscopy", Perkin Elmer Group, 1979
- 21 M. Shelef, K. Otto and N. C. Otto, *Adv. Catal.*, 1978, **27**, 311

Hydrogen in Amorphous Palladium Alloys

Substantial capacities for absorption of hydrogen by palladium and many palladium alloys, combined with high internal rates of hydrogen permeation, continue to provide attractive backgrounds for experimental study.

An additional valuable property is a retention of ductility on hydrogen absorption, which contrasts with undesirable embrittling effects produced by hydrogen in many metallic and also amorphous materials. Altogether these factors have latterly encouraged substantial research into absorption of hydrogen by glassy palladium-silicon alloys.

Two recent papers in *J. Less-Common Met.*, 1988, **138**, (2), 323-336 and 337-348 by A. Magnouche, R. Fromageau and J. Hillairet, and by R. Fromageau, A. Magnouche, G. Brebec and J. Hillairet, respectively, report a substantial body of further information concerning hydrogen in Pd₈₆Si₁₄, Pd₈₂Si₁₈ and Pd₈₀Si₂₀ amorphous alloys. The first concerns derivation of p-c-T relationships, at pressures up to 12 MPa and temperatures up to 200°C, and derived thermodynamic parameters. In the second paper ductile characteristics have allowed electrical resistivity to be utilised for studying the kinetics of hydrogen absorption and desorption, and the derivation of hydrogen mobilities. Indications of hydrogen diffusion coefficient increases with increasing hydrogen content have been interpreted as substantiating

conclusions from the p-c-T relationships of differing types of interstitial hydrogen sites in the glassy structures, and of mutual repulsions of interstitial hydrogens.

F.A.L.

A Catalytic Reaction Guide

The economics of a chemical process and the quality of the product depend to a significant extent on the use of the best catalyst for the purpose. To help industrial users identify the most appropriate catalyst for over sixty different processes, Johnson Matthey have recently prepared a guide which will contribute to the more effective use of platinum group metal catalysts. When a pointer on the slide chart is moved to indicate the desired product or reactant, the recommended heterogeneous or homogeneous catalyst and the process conditions are displayed; brief comments are also given.

The Catalytic Reaction Guide is now available in English, French and German, and may be obtained by writing to the Johnson Matthey office at Orchard Road, Royston, England; Paris, France; or Sulzbach, West Germany.