balance of speakers and delegates. Clear market opportunities were evident across many industrial and governmental interests, including the platinum industry.

In summary, the symposium had heard about the present developments and commercial availability of fuel cells. Notably, the demonstrations of 200 kW on-site PAFC units was to proceed. Major advances were being made in MCFC technology and these devices still offer perhaps one of the best options for fuel cell power production. SPFC technology had shown dramatic progress through lower noble metal electrocatalyst loadings, and with increased current densities being reported. SOFC still required much research and development but could represent a serious option later.

With so much demonstrable progress evident, albeit predominantly in the U.S.A. and Japan at present, the promise for fuel cells in a cleaner, more efficient future is still as bright as Grove foresaw so long ago.

The full proceedings will be published in the *Journal of Power Sources*.

Thermomagneto-Optical Recording Materials

COBALT/PLATINUM LAYERED STRUCTURES OFFER ADVANTAGES

Rewritable optical storage technology offers an attractive alternative to current magnetic recording, particularly with a capability to store 10^8 bits of information for each square centimetre of media material, together with remote optical reading, writing and erasing procedures. To date, the most promising candidates for magneto-optical recording are based on rare earth-transition metal (RE-TM) alloys deposited as thin amorphous layers on a variety of substrates. Such materials include variants of GdTbFe and TbFeCo.

Two recent publications by scientists at the Philips Research Laboratories, Eindhoven, and at the Central Research and Development Department of E.I. du Pont de Nemours, Wilmington, have highlighted both the deficiencies of current magneto-optic media based on RE-TM materials, and their advantages (1, 2). However, investigations by these researchers into the magnetic and magneto-optic characteristics of cobalt/platinum layered structures are clearly pointing the way to new magneto-optic media with enhanced properties, many of which overcome the deficiencies of current RE-TM based materials. For example, the cobalt/platinum layered structure media have excellent corrosion and oxidation resistance which eliminates the need for protective coatings. Also perpendicular magnetic anisotropy, a pre-requisite for advanced magneto-optical systems, has been achieved in these layered structures without the need for high temperature annealing, as in the case of proposed oxide candidates.

The authors in their respective papers present and discuss recent research findings on the magneto-optical Kerr effect of various cobalt/platinum layered structures, with differing thicknesses of cobalt and platinum. Preferential magnetisation perpendicular to the film planes has been shown for media having cobalt thicknesses <1.2 nm, with 100 per cent perpendicular remanence at cobalt thicknesses <0.45 nm. A multi-layer system having 25 layered structures of 0.41 nm cobalt and 1.9 nm platinum was used to demonstrate thermo-magneto-optic writing. This media system proved to have good perpendicular magnetic anisotropy, 100 per cent remanence and a coercive field of 76 kA/m, at room temperature.

Environmental stability tests were carried out on unprotected cobalt/platinum layered structures stored at ambient for several months. No sign of oxidation or corrosion, and no corruption of the magnetic and magneto-optical data was apparent on these media, which are considered to be promising candidates for magneto-optical recording.

Attention is drawn to another informative paper on the magneto-optical properties in ultra-thin cobalt/platinum and cobalt/palladium multilayer films, from the Sony Corporation Research Center, Yokohama, Japan, which is abstracted on page 222 of this Journal.

I.R.M.

References

1 W. B. Zeper, F. J. A. M. Greidanus, P. F. Carcia and C. R. Fincher, *J. Appl. Phys.*, 1989, **65**, (12), 4971

2 F. J. A. M. Greidanus, W. B. Zeper, F. J. A. den Broeder, W. F. Godlieb and P. F. Carcia, *Appl. Phys. Lett.*, 1989, **54**, (24), 2481