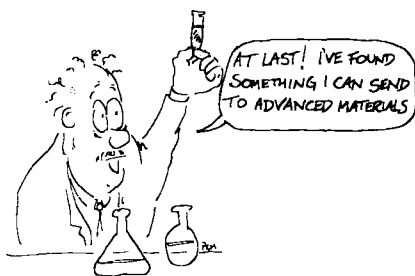


Materials Forum

Companies and individuals wishing their news and views on advanced materials issues and products to be considered for coverage in this section should send press releases, correspondence and other details, in English, to: Materials Forum, ADVANCED MATERIALS, P.O. Box 101161, D-6940 Weinheim, Federal Republic of Germany.



Seasons Greetings

The *Advanced Materials* production team would like to wish all our readers worldwide, a most merry Christmas and an enjoyable and happy New Year. Many of you will not know that *Advanced Materials* has, for the last year, also been published as part of the leading chemistry journal *Angewandte Chemie*. This will stop at the end of 1989, after which *Advanced Materials* will begin a totally independent existence, and its future, we are sure, will give us all cause to celebrate a successful New Year.

Japanese Materials

The Japanese Ministry for International Trade and Industry have just published the results of a survey on the commercialization of new materials. Of the 453 companies surveyed, 302 had been developing, producing or selling new

materials with a total of 1822 new materials being recorded. These figures represent a three-fold increase in both companies and products over the period 1985–1988. The chemical industry had shown the best performance in penetrating the new materials market followed by the ceramics, non-ferrous metals, steel and textile industries.

The report, and further information can be obtained from Pera-Otis, Melton Mowbray, Leicestershire LE13 OPB, UK.

Low Pressure Plasma

The integration of the plasma treatment of materials or devices into the regular production line has, in the past, been hindered by the slowness of the treatment, which requires high vacuum and long plasma generation times. Using a combination of high performance pumps, and using microwaves to generate the plasma instead of the traditional megahertz frequency generators, the company Technics Plasma has developed a plasma treatment system which has an turnover time one-third that of previous ones. The system has already been successfully incorporated into the production of plastic housings for ignition coils by the company Beru, Ruprecht (Ludwigsburg, FRG). The housings have to be coated with epoxy resin but before this is done the surfaces are conditioned with plasma, ensuring strong bonding with the resin.

Further information on this first, fully automatic plasma treatment system is available from Technics Plasma GmbH, Dieselstrasse 22, D-8011 Kirchheim bei München, FRG. Tel. (089) 903 8021. Fax. (089) 903 9553.

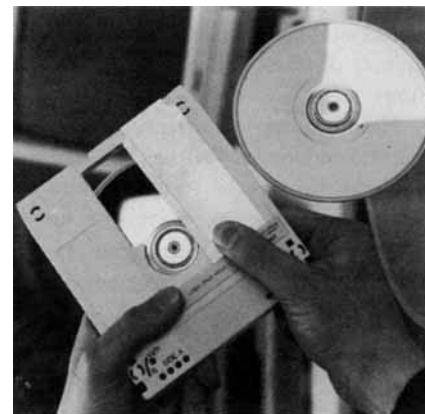
Optical Storage Media

Six years since its introduction, the Audio Compact Disc (CD) has firmly

established itself in entertainment electronics. Some 450 million of these silver discs were sold worldwide in 1988. Bayer AG played a decisive role in the development of suitable products for this application. Almost half the CDs sold around the world today are made from Makrolon CD 2000, a polycarbonate plastic from Bayer. Now that internationally valid standards for so-called "write once media" (WORM—write once read many) have been adopted, not only the WORM and CD ROM disc but also the CD video single have put life into the market for optical storage media for picture and data processing. Makrolon CD 2000 is also used successfully for these discs.

While the use of optical storage media was up to now limited to replacing old distribution techniques, such as records and print, the WORM disc is a new product which complements the newer techniques, such as micro-filming. With this system, the user is himself able to write data onto an optical storage disc and then read them out again as often as desired and without wear.

The Philips and Du Pont Optical (PDO) company has been selling WORM discs with a diameter of



The new WORM (write once read many) discs from Philips and Du Pont Optical (PDO) are made from Makrolon CD 2000, a polycarbonate from Bayer AG. They can be written on on both sides and are protected by a cassette. The formatted 5.25" disc offers the user 600 megabytes of free storage capacity. This corresponds to about 150,000 DIN sides of A 4, written in binary code.

130 mm based on Makrolon CD 2000 since the end of 1988. Intensive efforts to improve the product quality, especially in the production area, enabled PDO to meet even the highest requirements for WORM discs, a raw bit error rate of 10^{-6} , with Makrolon. WORM discs can be written on on both sides and are protected by a cassette. The formatted disc offers the user approximately 600 megabytes of free storage capacity. This corresponds to approximately 150,000 sides of A4, written in binary code.

A new medium in entertainment electronics is the CD video single with a diameter of 120 mm, which boasts not only a digital audio section, but also a video part about 5 minutes long. Philips and Sony first introduced this disc on the US market at the start of 1988, launching it in Europe at the end of 1988.

The MO (magneto-optic) storage technique (erasable system) being tested at the moment makes particularly great demands on the birefringence which can only be met with difficulty by the polycarbonate grades available today. Bayer is developing new substrate materials based on thermoplastics and thermosetting plastics for this application. The products are undergoing market trials.

Further details are available from Abteilung Öffentlichkeitsarbeit, Bayer AG, D-5090 Leverkusen, Bayerwerk, FRG Tel. (0214) 30-81725

Materials Database

The first electronic materials database to be made available freely to the plastics industry was created by ICI. K'89 in Düsseldorf, 2-9 November, provided the launchpad for an updated version of the company's Engineering Plastics On Screen materials database EPOS 90.

The new version will not only be faster and more user friendly, but will also contain a more comprehensive coverage of available ICI polymers. As before, price data will be included, and EPOS 90 will be complemented by the

latest version of the EPOS F fluoropolymer database.

The new system has been devised with a general, unified approach in mind which will be more compact, outline the technical advantages of using ICI materials, and will contain more detailed information for the design engineer.

Disks will be available in 5.25" and 3.5" formats and are designed to run on IBM PC's and compatible hardware.

Further information is available from Madeline Whitfield, ICI Advanced Materials, P.O. Box 6, Shire Park, Bessemer Road, Welwyn Garden City, Hertfordshire AL7 1HD, UK. Tel. (0707) 323400. Fax. (0707) 335556.

Wiring Board Inspection System

Nippon Steel, and Eastern Co., Ltd., a leading manufacturer of printed wiring boards, have started production and sales of a jointly-developed automatic printed wiring board inspection system, the PT Series.

Printed wiring boards are having to accommodate an increasingly high density of components, and board manufacturers have been responding to these needs by providing multilayer boards and finer circuit lines.

With visual checks becoming unfeasible, there is a strong demand for systems which are capable of checking boards automatically. The PT Series was developed as the answer to these needs. Its principal features are:

1. A high-detection accuracy of 80 microns (the minimum width for inspection) and a maximum resolution of 5 microns.
2. A high-speed check can be performed at a rate of 3 m²/min.
3. Two methods, feature extraction and comparison, can be used in parallel, so it can cover a wide range of applications, including checks of external and internal layers and phototools.
4. Full use of computers allows checking conditions to be set and imaging sys-

tem settings to be determined automatically.

Nippon Steel accumulated its image processing and pattern recognition technology as a result of the surface inspection of steel sheets. Information processing technologies using computers have also been developed. In addition, the defect detection algorithm was applied to the system, which is based on the cross operator method developed by Professor *Gotaro Odawara* of the University of Tokyo's engineering faculty. The final link in the system was the advanced manufacturing capabilities and experience of Eastern.

Further information is available from Nippon Steel Corporation, Königsallee 30, D-4000 Düsseldorf, FRG. Tel. (0211) 320791. Fax (0211) 329368.

Intermetallic Alloys

Intermetallic alloys based on titanium, nickel and niobium aluminides are potentially interesting and important materials for future aircraft and aerospace applications. They can be used as monolithic or matrix materials for fiber reinforced compound materials.

For material development work in this field, Marko Materials, North Billerica, Massachusetts, USA, have developed a laboratory melt spinning unit for the production of rapidly solidified filaments, fibers and powder.

The Marko melt spinner permits the production of alloys of high purity, for example Fe-Nd-B magnet materials and high melting refractory alloys with melting temperatures up to 3000°C (Tungsten, Columbium, Molybdenum). Another promising application is to produce high temperature superconductors based on Y-Ba-Cu.

The fully assembled, turnkey systems, many of which are already operating in research institutes in the USA and Japan, are now marketed in Europe by Industriekontor Rolf Hardt, Benrather Schlossufer 51, D-4000 Düsseldorf 13, FRG. Tel. (0211) 712828. Fax (0211) 71 31 86.