Crystallographers

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This section is intended to be a series of short paragraphs dealing with the activities of crystallographers, such as their changes of position, promotions, assumption of significant new duties, honours, etc. Items for inclusion, subject to the approval of the Editorial Board, should be sent to the Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 5 Abbey Square, Chester CH1 2HU, England).

Heinz Bilz, one of the directors of the Max-Planck-Institut für Festkörperforschung, died unexpectedly on 26 June 1986, shortly after his 60th birthday.

Heinz Bilz was born in Berlin on 18 May 1926. After the war he began to study physics at the University of Frankfurt am Main. In 1958 he obtained his PhD in physics under F. Hund with a dissertation entitled 'Electronic States of Refractory Compounds'. In 1964 he became full Professor for Theoretical Physics in Frankfurt. Five years later he moved to the Technical University of Munich. Finally, in 1972 he became Director at the newly established Max-Planck Institut for Solid-State Research in Stuttgart. Dr A. Rabenau writes that Professor Bilz's main field of interest was the theory of lattice dynamics to which he contributed more than 100 scientific papers and two books. In recent years he was concerned in particular with electron–phonon coupling, soft modes, structural phase transitions and the relations between structure and dynamics. Despite being a theorist, he was widely known for his ability to communicate effectively with experimentalists. The door of his office was always open to anybody who had a problem. Many of his colleagues and students will still remember stimulating and fruitful discussions with him. He had the ingenious ability to produce quickly stimulating ideas during such discussions. Apart from his scientific merits, one of his outstanding characteristics was that he enjoyed being a magnanimous host. His house was a frequent meeting place for colleagues, students, and the guests of the Institute. His interests ranged from physics and philosophy to classical music. He was an outstanding human being and a first class scientist. With his death we have lost a dear friend and colleague.

With deep distress the scientific community has learned about the unexpected death of Professor **Werner Schmatz** by a heart attack, on 13 November 1986. Born in 1933 in Munich, he studied physics at the Munich University and, after several years in the Physikalisch Technische Bundesanstalt in Braunschweig, he finished his thesis in 1960; he then started to work at the Munich research reactor under Professor H. Maier-Leibnitz. In 1964 he went to the KFA Jülich, where, in 1973, he became one of the Directors at the Institut für Festkörperforschung; simultaneously, he was appointed Professor at the University of Bochum. Professor Dr T. Springer writes that during this time in Jülich, his primary research efforts were focused on the study of disordered metals by means of neutron scattering techniques. His research efforts, and those of his co-workers, were internationally recognized; consider for example, the investigations on radiation damage and precipitates by neutron small-angle scattering, or the diffuse scattering studies of lattice displacements around impurities. He also introduced the H_2O/D_2O contrast method in small-angle scattering investigations of biological molecules, for example hemoglobin. It was a period of pioneer work. His main interest turned to physical problems, but he also considered the promotion and improvement of scientific methods as the key to scientific progress. In 1977, he left the KFA Jülich to become Director of the Institute for Applied Nuclear Physics in the KfK Karlsruhe where he also started work on high-resolution electron-energy-loss spectroscopy. The friends and colleagues of Werner Schmatz will always remember his enthusiasm and openmindedness, and his untiring commitment to his co-workers and students.

Professor **N. N. Greenwood**, Department of Inorganic and Structural Chemistry, Leeds University, has been elected a Fellow of the Royal Society for wide-ranging synthetic and structural studies on compounds of boron.

Dr **Olga Kennard**, Director of the Cambridge Crystallographic Data Centre, has been elected a Fellow of the Royal Society in recognition of her investigations of organic molecules by diffraction methods.

New Commercial Products

Announcements of new commercial products are published by the Journal of Applied Crystallography *free of charge. The descriptions, up to 300 words or the equivalent if a figure is included, should give the price and the manufacturer's full address. Full or partial inclusion is subject to the Editor's approval and to the space available. All correspondence should be sent to the Editor, Professor M. Schlenker, Editor* Journal of Applied Crystallography, *Laboratoire Louis Néel du CNRS, BP166, F-38042 Grenoble CEDEX, France.*

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X-ray Generator DG2 from £7150

This new **DG2 X-ray generator** follows model DG1 and complements a comprehensive range of diffraction equipment. It has a high-stability 60 kV, 50 mA, 3 kW maximum specification and is suitable for all X-ray diffraction applications. Safety features include: water flow and temperature monitors, over power setting; cut out and indicator bulbs; and safety housing interlocks. It can be purchased with a view to integration with existing equipment or together with our tube/tube shield and HT cable for a completely new installation.

Hiltonbrooks Ltd, Knutsford Road, Cranage, Holmes Chapel, Cheshire, CW4 8EP, England

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EEV MOCVD Equipment

EEV, initially in association with scientists at RSRE, developed its **MOCVD equipment** for the production of photocathodes. These are used in EEV products such as the latest third generation image intensifiers.

As a major crystal user and approved DEF STAN 05-21 (NATO AQAP-1) manufacturer, EEV are establishing what will be one of the largest MOCVD facilities in the world. By designing and building their own MOCVD equipment, EEV have ensured the highest quality of all their semiconductor-based products.

The equipment is superior in construction, more convenient to use and easier to service than comparable systems. It also incorporates the most advanced interactive computer facilities available for this kind of equipment.

EEV MOCVD equipment is enclosed within a clean-room-compatible extraction cabinet. A laminar downflow unit mounted on top of the frame provides absolute filtration of the make-up air.

The gas network is designed to make maintenance, sub-assembly replacement and *in situ* leak checking easy.

EEV MOCVD equipment is designed and manufactured to the highest leak-proof performance specifications using only the most appropriate materials and components for the process. Inert gas welding is employed where possible on sub-assemblies which are then interconnected normally with VCR fittings.

Where abrupt or controlled profile junctions are required, flow/bypass switching manifolds control the gas and vapour flow into the reaction cell and can produce monolayer transition junctions. These manifolds are fabricated to the highest tolerances using production techniques acquired through EEV's experience as one of the world's leading manufacturers of vacuum devices.

As a major user of semiconductors and MOCVD equipment, EEV have considerable experience in specifying the systems most appropriate to manufacturing requirements. As a result, EEV can offer customers a full custom-design service to ensure that the final specification exactly meets individual user needs.

EEV, Waterhouse Lane, Chelmsford, Essex CM1 2QU, England

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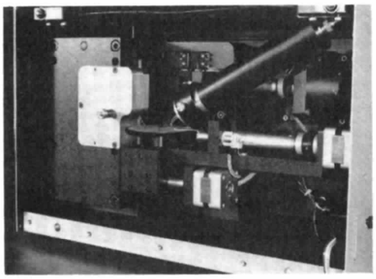
Desk-Top Double-Axis X-ray Diffractometer for On-line Quality Control

Double-axis X-ray diffractometry is now used extensively in the electronics industry for the measurement of composition, thickness and perfection of the heteroepitaxial structures which form the basis of opto-electronic devices. As a matter of routine, a number of companies now subject all wafers to rocking-curve analysis prior to the fabrication of devices. Until now, most of the measurements have been carried out in research laboratories by specialist crystallographers on instruments designed principally for research purposes. In order to facilitate the use of rocking-curve analysis as an on-line non-destructive testing technique, Bede Scientific Instruments has developed a novel **desk-top double-axis diffractometer**. It is designed to be simple in operation, permit rapid specimen throughput, minimize sample handling, eliminate the use of adhesives and be installed in a clean room using a minimum of (expensive) space. The QC1 diffractometer incorporates an integral air-cooled X-ray generator and a fixed reference crystal in an accurately machined collimator assembly. Although restricted to one reflection, reference crystal and collimator assemblies are readily interchangeable. The incidence plane is vertical and the beam from the reference crystal is aligned with the centre of the specimen platform. The specimen is rested horizontally on this stage, eliminating the use of adhesive and permitting easy specimen changing. A novel rotation stage permits automatic tilt optimization, though the low beam divergence makes this procedure often unnecessary for III–V wafers. Rocking curves may be taken from various points on the wafer by use of an integral translation stage. In order to match the requirements of on-line quality control rather than research work, the resolution is chosen to be either 1 or 2 arc s. The instrument is controlled by an IBM (or compatible) microcomputer and a rapidly developing suite of control and



Bede desk-top double-axis diffractometer

analysis software is available. A one hour training period is sufficient in order for a complete novice to run the instrument and rocking curves can be recorded at a rate of about one every ten minutes. Two instruments have now been delivered, the US price being of the order of $54 000 depending on options selected.

Bede Scientific Instruments, Church Street, Coxhoe, Durham, England

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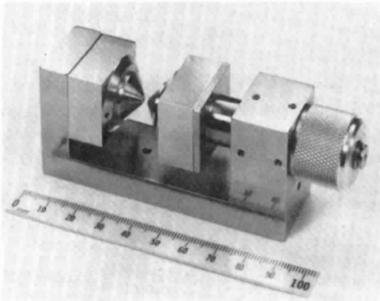
Small Permanent Magnet for Fields up to 2·5 Tesla



SAM-2 permanent magnet

The **SAM-2 permanent magnet** is designed for aligning macromolecular assemblies and liquid crystalline specimens for X-ray and light scattering experiments, and for light microscopy. The magnet gap is continuously variable from 0 to 12 mm. The magnet produces a uniform field of 2·5 Tesla with a 1 mm gap, and 2·0 Tesla with a 2 mm gap. The steel yoke and iron pole pieces are magnetized by high-performance FeNdB magnets. The conical shape of the pole pieces is optimized for a high field strength in the gap, and provides a large access angle to a specimen centred in the gap. A hole runs through the magnet along the axis of the pole pieces, providing the option of orienting a capillary parallel to the magnetic field. The diameter of the hole through the pole pieces is 1 mm, and the diameter of the face of the pole pieces is 3 mm. The overall dimensions of the assembly are $2{\cdot}5 \times 4{\cdot}5 \times 11$ cm. All steel and iron parts, and the magnets, are nickel plated to prevent corrosion. The price is US$1075.

Walter Charles Associates, 2 Crescent Hill Ave, Arlington, MA 02174, USA

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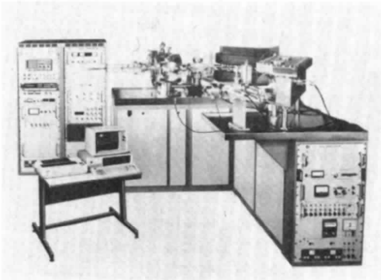
VG9000 Glow Discharge Mass Spectrometer



VG9000 mass spectrometer

A glow discharge mass spectrometer incorporating a high-resolution analyser is available from VG Elemental, Winsford, Cheshire.

The **VG9000 glow discharge mass spectrometer** provides fast sensitive elemental analysis of solid samples. Full elemental coverage and measurement capability to below 1 p.p.b. directly in the solid. High stability, simple spectra and low matrix effects all combine to give precise results with excellent quantitation. The VG9000 measures major, minor and trace constituents with equal ease. Measurements can be made on bulk starting materials, crucible and puller materials, through to finished wafers and devices. In effect, this single technique has the capability for total characterization of materials that can impact on finished product performance.

Typical applications include: analysis of high-purity metals, *e.g.* Ga, In, As, Te, Al, Pb, W; analysis of semiconductor crucible material, *e.g.* SiC, BN; analysis of wafers, Si, GaAs, In–Sb; measurement of dopants, *e.g.* Si, As, Cd; transition elements in difficult matrices, *e.g.* Si, Cd–Te; alpha emitters in substrate and packaging materials; alpha emitters in refractory interconnects, *e.g.* Ta, Mo.

VG Elemental, Ion Path, Road Three, Winsford, Cheshire CW7 3BX, England