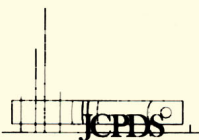


# Powder Diffraction

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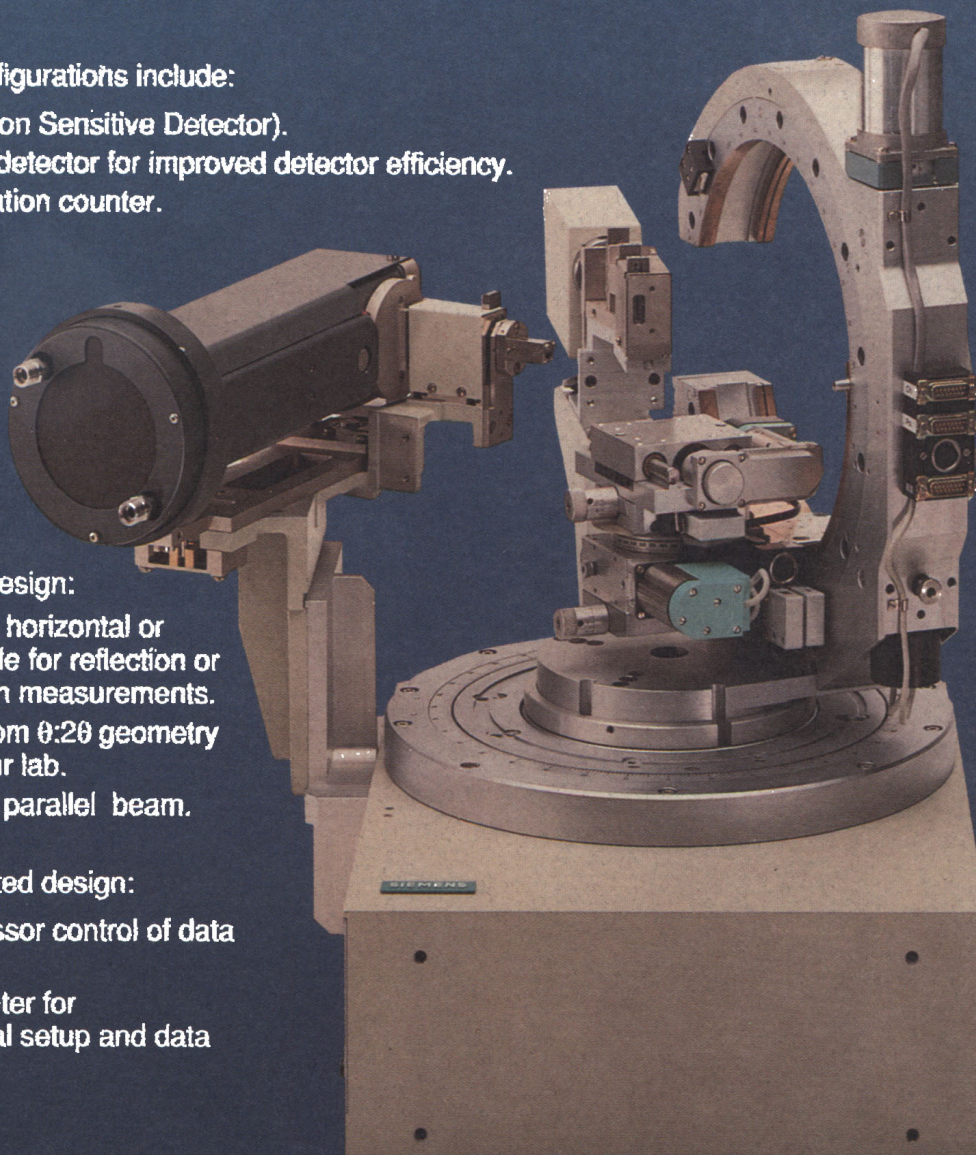
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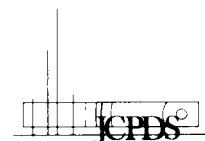
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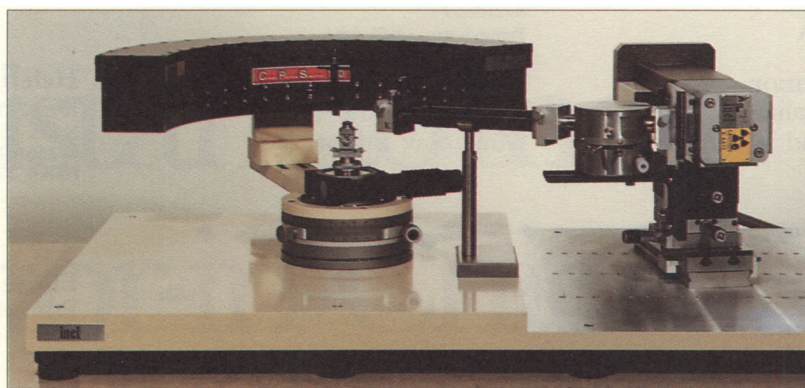
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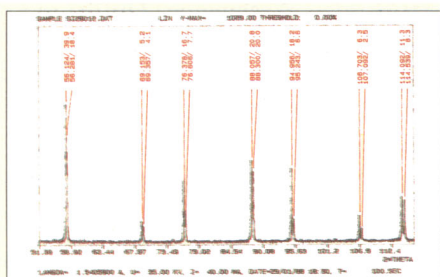




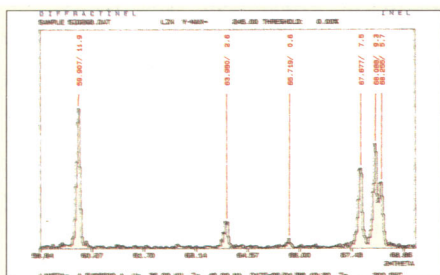
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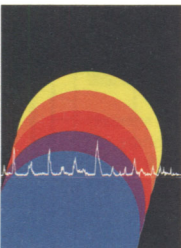
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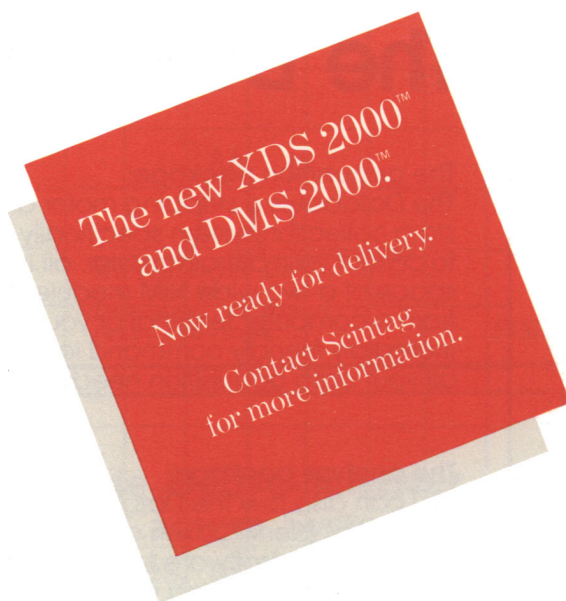
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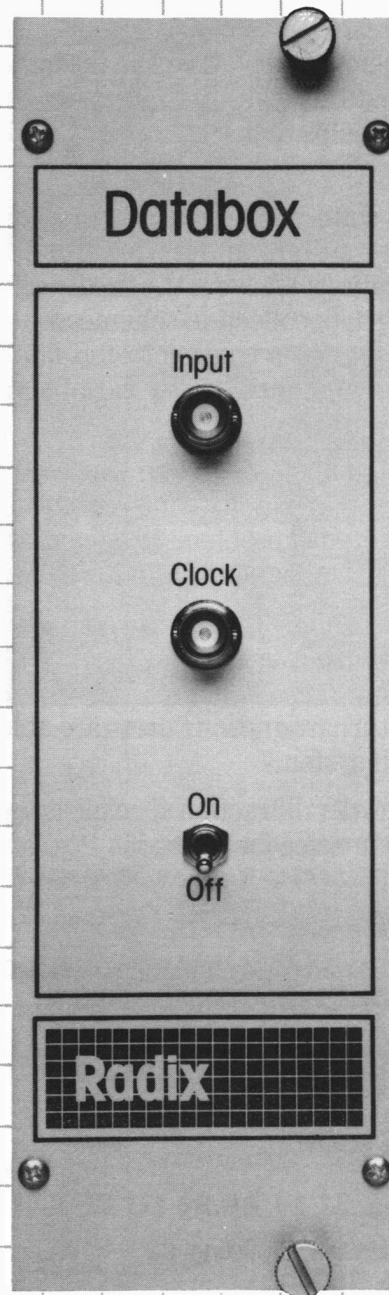
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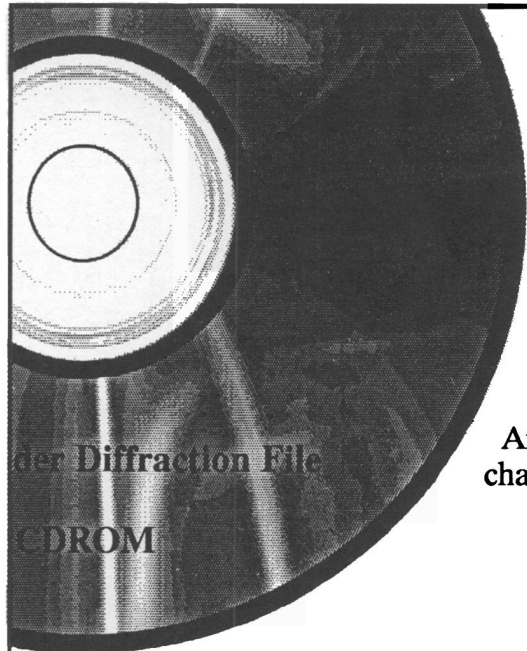
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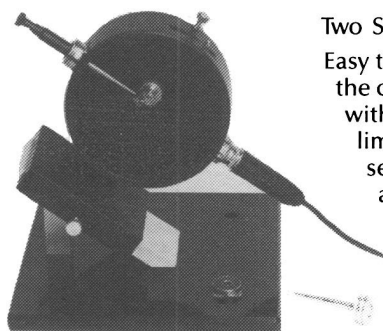


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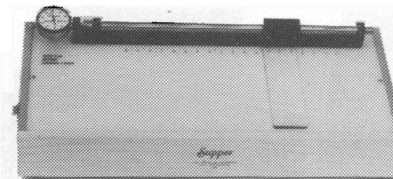
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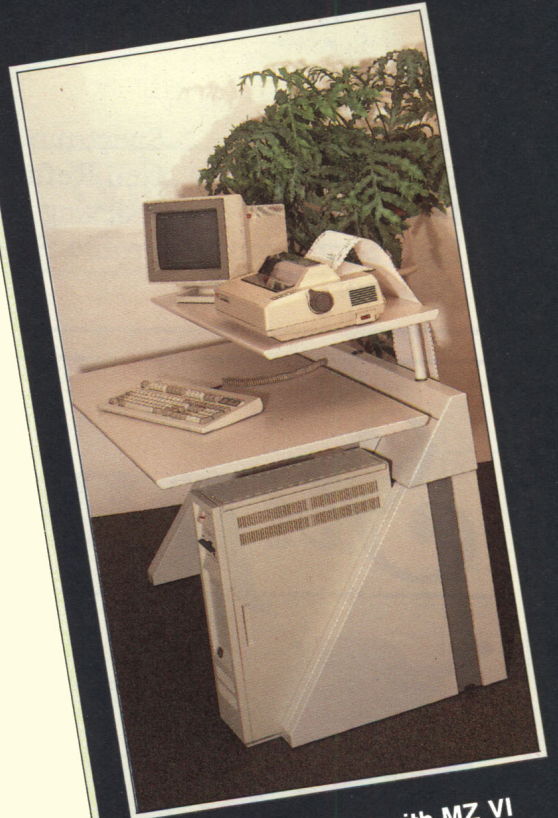
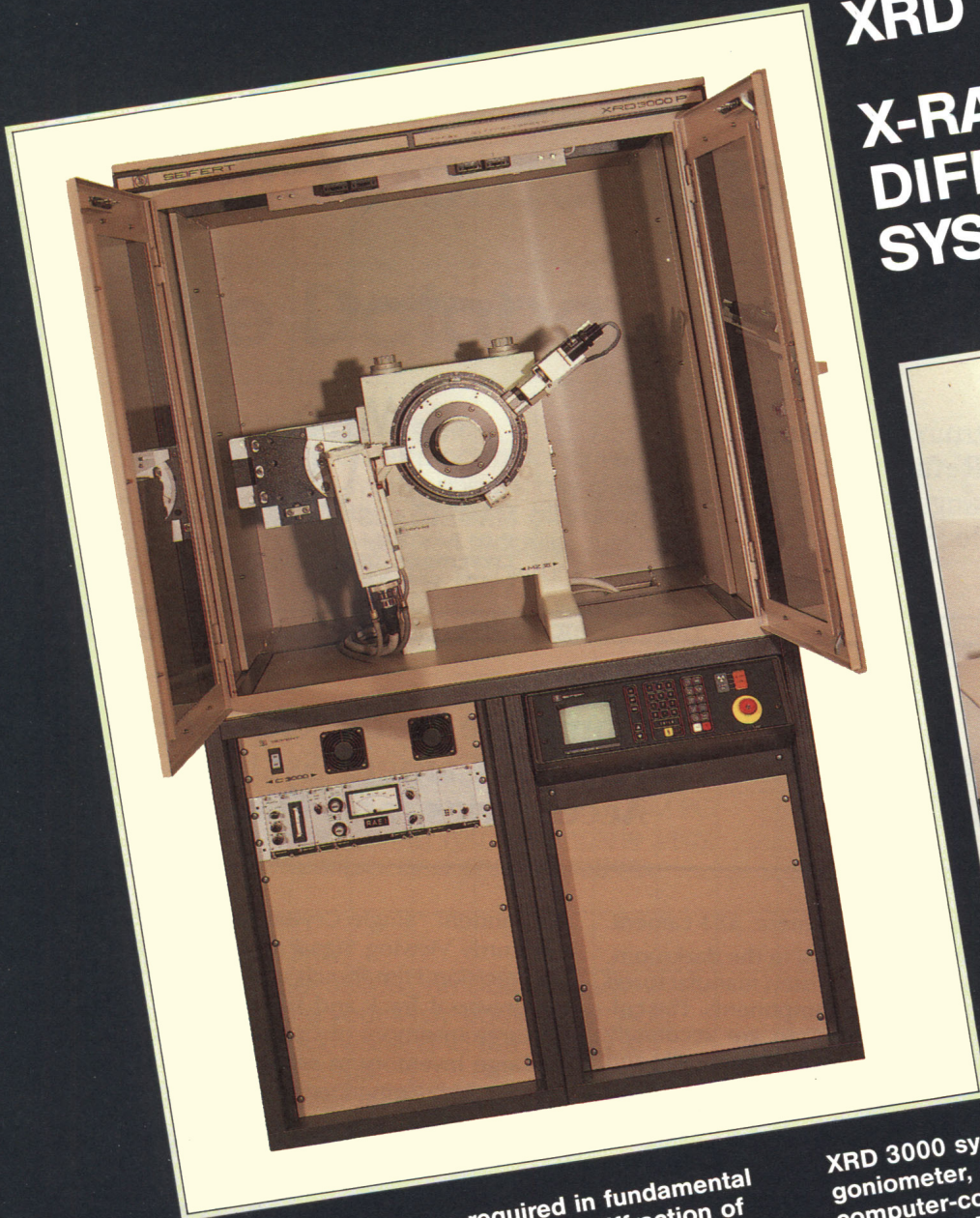
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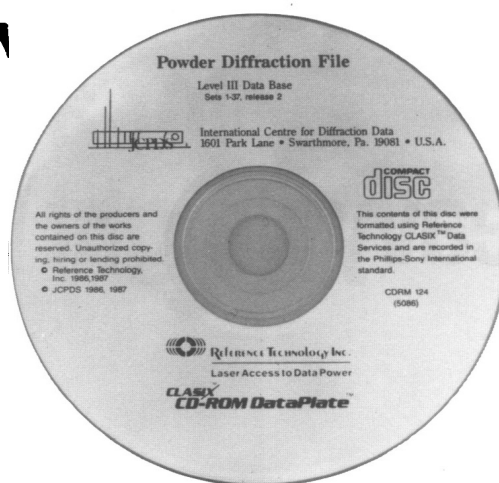


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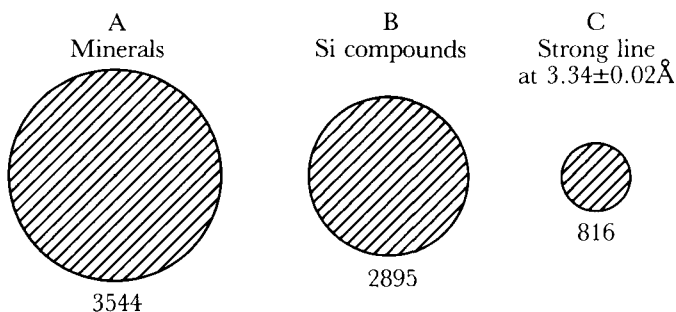


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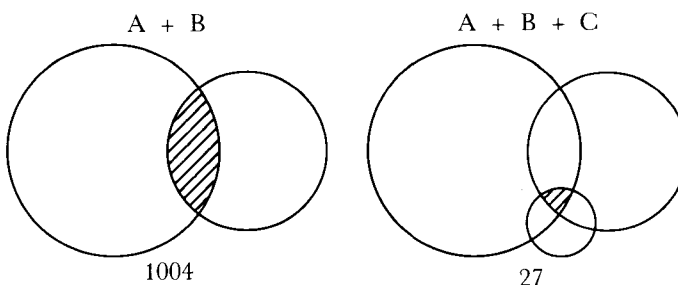
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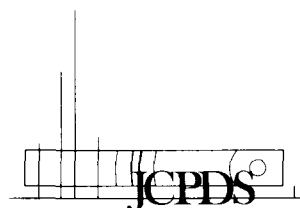
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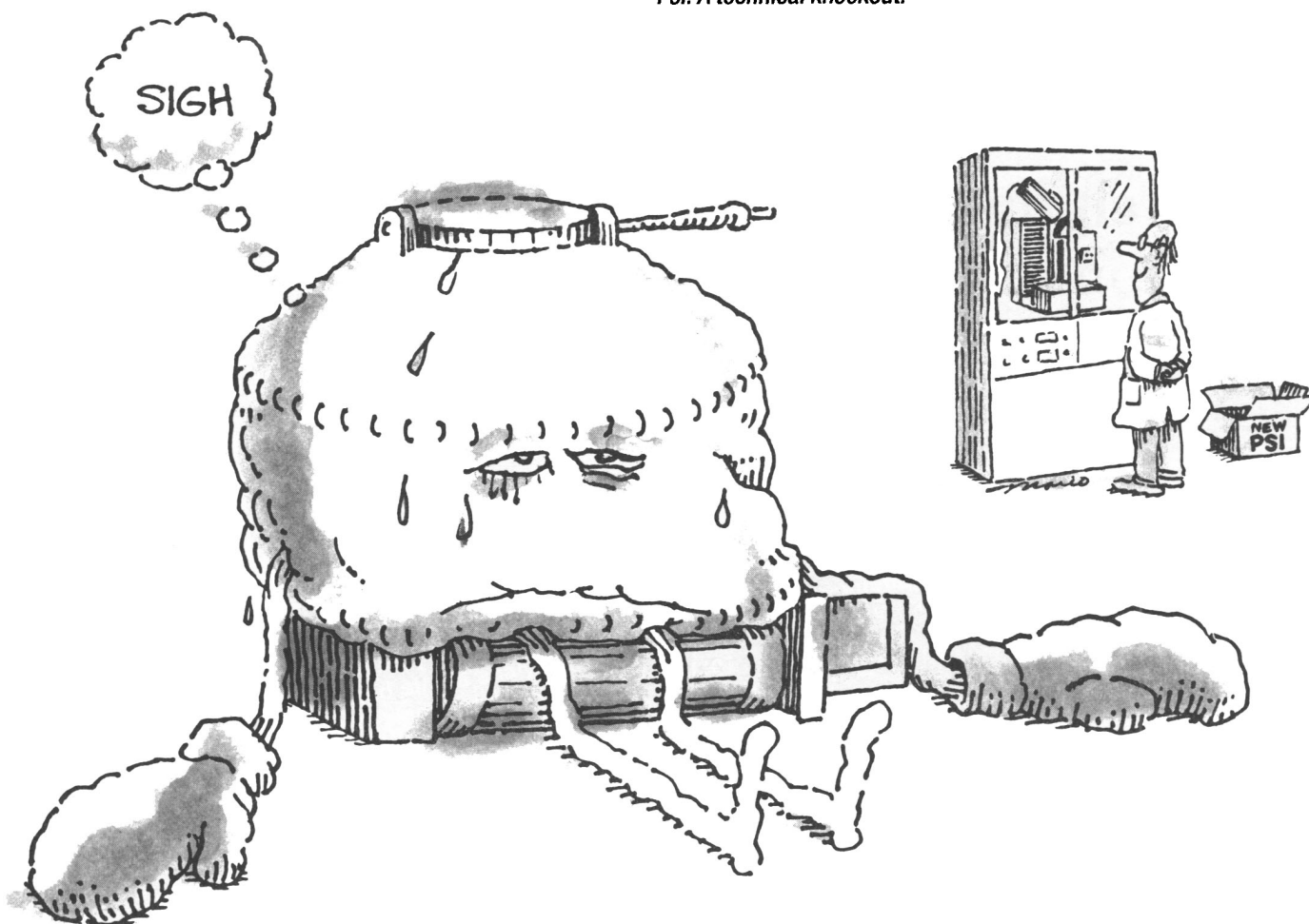
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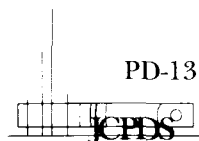
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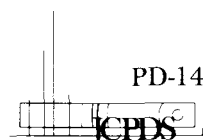
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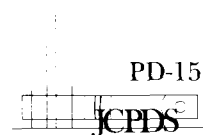
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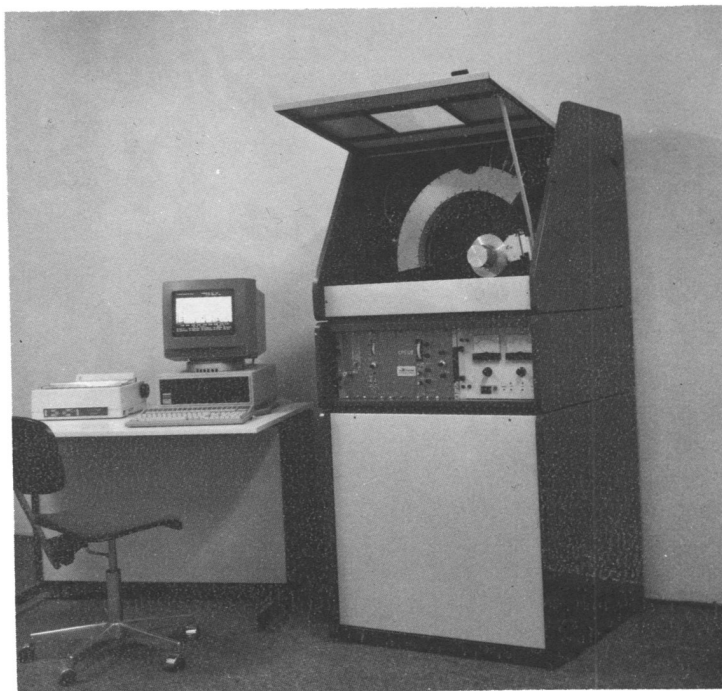


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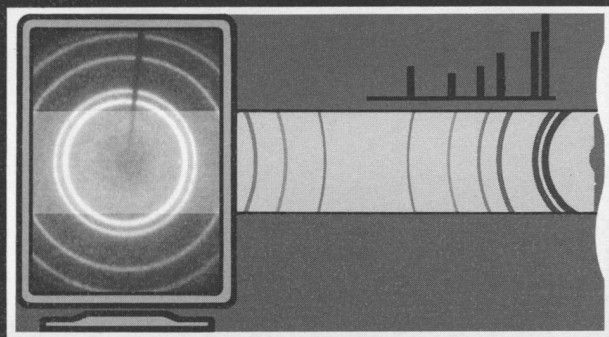
X RED... an X Ray Electronic Diffractometer based on a Curved Position Sensitive detector ranging 120 degrees with a resolution of better than 0.03 dg. and its associated electronic, X-ray generator, water refrigerator unit, all included in an independent X-ray proof cabinet. Of course linked to a PC Olivetti Computer with its fine graphic performance, to display in real time a diffraction pattern. And more, automatic sample exchanger for capillaries, liquid, high, low temperature attachment. X-RED - CAN SAVE YOU A LOT OF TIME IN DATA COLLECTION SPECIALLY IN THE FIELD OF ROUTINE POWDER AND AMORPHOUS MATERIALS ANALYSIS.



PD-17

38066 RIVA DEL GARDA - Zona Industriale Baltera (ITALY) - Tel. 0464/553426 - Telex 400278 RIVTOUR

## X-RAY DIFFRACTION SERVICES



### Structure Determination

- Unit Cells
- Structure Solution
- Absolute Configuration

### Material Characterization

- Phase Identification
- Percent Crystallinity
- Polymorphism
- Hydrated/Solvated Forms

- Method Development
- QC/QA Testing
- JCPDS Search
- Quantitative Studies

### Support Services

- Quantitative Elemental Analysis
- Mass Spectrometry
- Scanning Electron Microscopy/EDX
- Auger Electron Spectroscopy/SIMS

**ORS** ONEIDA RESEARCH SERVICES, INC.

One Halsey Road  
Whitesboro, NY 13492  
Phone (315) 736-3050

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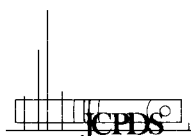
## EISI Elemental and Interplanar Spacing Index

**Utilizing** experimental d-Spacings and elemental data...

**Search** using combinations of Elemental Data Compound Formulae and then ...

**Identify** matches EISI<sub>LY</sub>

Now available



for  
**ED**  
for  
**XRD**

JCPDS - International Centre for Diffraction Data  
1601 Park Lane, Swarthmore, PA 19081 U.S.A.  
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# SIETRONICS

## SieRay 112

### Automation for X-ray Diffractometers (For a lot less than you thought)



- Fit a stepping motor to a manual powder diffraction goniometer, with standardised kits available for most models. Alternatively an existing stepping motor can be utilized.
- Use your existing counting electronics, or purchase the SieRay 112 with built-in counting electronics (as pictured above), AND a new detector if necessary.
- Speed up your data reduction with automatic background stripping, peak finding and on-screen editing. There's even a manual peak finder for difficult cases.
- Experience the power of having the JCPDS® data base on-line, via Fein-Marquart Associates "uPDSM"® or using "SIROQUANT"® pattern synthesis/stripping quantitative software.
- Extend your automation by controlling auto sample loaders or driving multiple goniometers from the one interface. Versions of 112 software are also available for other XRD microprocessors.
- Consider the SieRay 113 automation for x-ray spectrometers — just as flexible and versatile as the SieRay 112 and just as cost-effective.
- Installation and commissioning available — or do it yourself in 1 day for a SieRay 112.

**SIETRONICS PTY LIMITED**

P.O. Box 84, HAWKER, A.C.T., 2614 AUSTRALIA

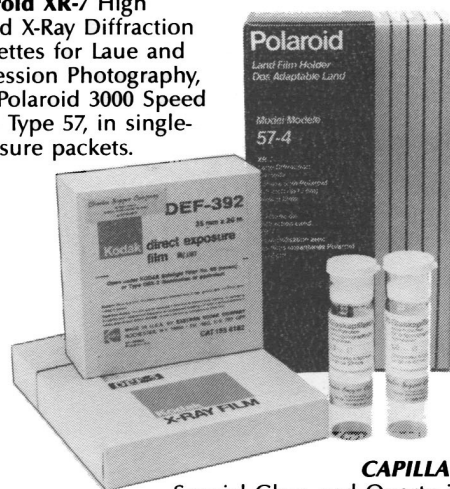
Phone: (062) 51 6611 : Telex AA62754 : Fax: (062) 51 6659

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### Capillary Tubes and Laboratory Supplies for X-Ray Diffraction Use

**Kodak Direct Exposure Film** especially developed for X-ray diffraction analysis. Available in 35mm x 20m rolls and in 50 sheet boxes.

**Polaroid XR-7 High Speed X-Ray Diffraction Cassettes** for Laue and Precession Photography, and Polaroid 3000 Speed Film, Type 57, in single-exposure packets.



#### **CAPILLARY TUBES**

Special Glass and Quartz in 15 sizes from 0.1mm to 3.5mm O.D. Uniform 89mm length and funnel shaped at the top. 0.01mm wall thickness.

Manufacturers of Fine  
X-Ray Diffraction Equip-  
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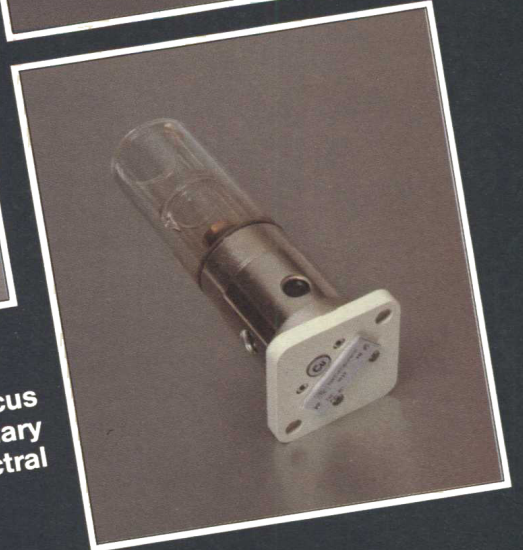
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# SEIFERT

## X-RAY TUBES



The SEIFERT diffraction X-ray tubes SN 60 with normal focus and SF 60 with fine focus are featured by a high primary intensity at a homogeneous intensity distribution, spectral purity, and a long lifetime.



**SEIFERT X-RAY CORPORATION**  
2551 Industry Lane, P.O. Box 294, Fairview Village, Pennsylvania 19409  
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Continuing education in the use of powder diffraction for characterization and analysis is becoming more and more important as new crystalline materials are being developed at an ever increasing rate. The recent flurry of activity in the rush to find new superconductors has emphasized the need to have detailed knowledge of the crystalline state to correlate with the physical property measurements during the development of such materials. Most materials laboratories have modern diffraction equipment capable of obtaining data of far better quality than even 10 years ago. Unfortunately, the training of the personnel who use the equipment has not kept pace with the level of sophistication of the equipment except in those laboratories where new types of experimentation are being developed. In the service-oriented laboratory, the personnel are often assigned the responsibility of providing the important crystal data without adequate prior training in their academic education. The training is then obtained on the job and in short courses run by universities and organizations such as the International Centre for Diffraction Data.

The ICDD has been concerned with continuing education for over 20 years, and the Education Subcommittee has been responsible for the development of courses and study materials which are used in the courses. At the present time, the ICDD runs half a dozen short courses each year throughout the U.S. and Europe on the use of the Powder Diffraction File for identification of materials and their characterization. In addition, members assist in other short courses on diffraction experimentation and data interpretation both at university sites and associated with scientific meetings. Education is also the topic of many of the papers in this journal. These experiences have lead to the preparation of three new products which may be useful to the experienced diffractionist as well as the newcomer to the field.

The first of these products has been 11 years in the making. In conjunction with the American Chemical Society, an AUDIO COURSE IN X-RAY POWDER DIFFRACTION has been prepared. This course is designed to instruct the beginner in the principles of diffraction experiments, instrumentation, sample preparation and data evaluation in qualitative analysis. Cassette tapes in instruction-module format are listened to while referring to a manual with detailed illustrations for the student to follow. This course is a good way to introduce the newly as-

signed personnel to the methods of analysis that they will most likely use in the course of their work. The instructional package is available from the American Chemical Society as part of their Professional Development Courses for the Chemical Sciences. Orders may be placed through the ACS Department of Continuing Education, P.O. Box 57136, West End Station, Washington, DC 20037.

The ICDD is continuing to collect the educational papers which have appeared in this journal, and they are incorporated in the METHODS AND PRACTICES MANUAL which is available from ICDD. This manual is dynamic in that it continues to grow as new papers are prepared. There is a long-range plan to cover topics such as sample preparation for all types of experiments, alignment of instruments and data correction techniques, reference standards and tests, and many other subjects of practical application in the laboratory. Although most authors are active ICDD members working on subcommittee projects, nonmembers are encouraged to submit appropriate papers for consideration to this journal.

The third edition of the USE OF THE POWDER DIFFRACTION FILE and accompanying SELECTED POWDER DIFFRACTION DATA FOR EDUCATION AND TRAINING has just been released which is the work package used in the ICDD short courses. This work package has evolved over 15 years and has also been used in many diffraction courses in universities. It is especially appropriate at institutions which do not have the equipment to collect data; its well selected examples illustrate many typical problems encountered in all laboratories. The data book provides a subset of the Powder Diffraction File for use with other topical workbooks in preparation. One example is the Mineral File Workbook which is available. Other topics include problems in forensic analysis, organic analysis and metallurgy. These materials are available from ICDD.

Education is a continuing matter for all researchers. Hopefully, the availability of these new products will fill some of the training voids which have been present for some time.

Deane K. Smith  
Chairman, International Centre  
for Diffraction Data