12. ADVANCES IN POWDER DIFFRACTION

12.1-2 SHORT TIME X-RAY POWDER DIFFRACTION USING SYNCHROTRON RADIATION. BY K.Kosten and H.Arnold, Institut für Kristallographie der TH Aachen, Germany.

At HASYLAB, Hamburg, a DeWolff monochromator and a Guinier camera is installed in order to obtain diffraction patterns of phase transitions and chemical reactions. The shortest exposure time obtained was 10 sec. Low temperature devices and high temperature furnaces are available. Several phase transitions and chemical reactions have been studied. As examples the hydration of CaSO₄·1/2H₂O to gypsum and the decomposition and phase transitions of Na₂MoO₄·2H₂O are shown.

12.1-1 FILM READER PROGRAM FOR GUINIER POWDER PATTERN. BY T. Evans, M. K.Hill and C. M. Foris, Central Research and Development Dept., E. I. du Pont de Nemours & Company, Wilmington, Delaware 19889, U.S.A.

A computer program has been developed for collecting digitized intensity/position data from x-ray powder diffraction films obtained with a Guinier-type focusing camera. This program utilizes the capabilities of the Optronics Model 512 color terminal and is operating on a Digital Equipment Corporation P-1700 Photomation and an Advance Electronic Design (ADE) Model 512 color terminal and is operating on a Digital Electronics PDP 11/60 (RSX-11M) computer. Through a series of interactive commands the absorbance data for a specified area of the film (e.g., a narrow center strip) can be read, stored and displayed. A specified area of the film can be read, stored and displayed. The ADE 512 screen display reproduces, as artifically enhances, the film image. Both hardware and software magnification (zoom) aid cursor positioning of points to define a line, according to a least-squares fit, through the center of curvature of the reflections recorded on the film. A specified number of absorbance data values surrounding the defined line are then averaged at each vertical scan position. Finally, a disk file of averaged absorbance and film position vs. position (2-dimensional) data for other types of diffraction films, such as those obtained with fibers and polymer materials.