

## **NEW TEXTBOOK: FUNDAMENTALS OF POWDER DIFFRACTION AND STRUCTURAL CHARACTERIZATION OF MATERIALS**

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There has never been a lack of monographs and textbooks covering multiple aspects of powder diffraction and its applications. These include: Klug and Alexander (1954), Azaroff and Buerger (1958), Lipson and Steeple (1970), Cullity (1956 and 1978), Bish and Post (1989), Jenkins and Snyder (1996), and Cullity and Stock (2001). A variety of structural characterization issues have been recently reviewed in two collective monographs: The Rietveld method (edited by Young, 1993) and Structure determination from powder diffraction data (edited by David, Shankland, McCusker, and Baerlocher, 2002). Primary motivation for our work was the absence of a suitable text that can be used by both the undergraduate and graduate students interested in pursuing in-depth knowledge and gaining practical experience in the application of the powder diffraction method to structure solution and refinement.

The book requires no prior knowledge of the subject and is divided into seven chapters:

1. Fundamentals of Crystalline State
2. Fundamentals of Diffraction
3. Experimental Techniques
4. Preliminary Data Processing and Phase Analysis
5. Unit Cell Determination and Refinement
6. Crystal Structure Determination
7. Crystal Structure Refinement

The book contains some 320 figures, 160 tables, and 330 equations. It is supplemented by an electronic volume on a compact disk, which contains powder diffraction data collected from a variety of materials that are provided as examples and can be used as self-exercises. The CD also contains solutions of near 70 problems offered at the end of every chapter. In addition, color electronic versions of all figures found throughout the book are also found on the CD as a slide show, which we hope will be useful to both instructors and students. The disk is organized as a web page (no internet connection needed), to make it easy to navigate. All web links, found in the book, are included on the CD and can be easily followed, provided your computer is connected to the internet.