

## Diffraction X-ray Optics

A.I. Erko, V.V. Aristov and B. Vidal

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How to focus X-rays? This 162 pages book is intended to answer to this question by authors considered as international experts in the fabrication and the development of new optics for X-ray beams. They are based on the use of three-dimensional structures combining Bragg reflection and Fresnel diffraction and are consequently called: Bragg-Fresnel Optics. The book consists of six chapters. Current information on the optical properties of materials in the X-ray wavelength range and the methods of measurements of the optical constants are briefly considered in chapter 1 (15 p.). Much attention is paid to the analysis of characteristics of the Fresnel zone optics (Chapter 2: 27 p.) and the methods of X-ray coherent transmission (Chapter 3: 24 p.). Resolution, efficiency and aberration properties of Fresnel and Fourier optics are analysed. X-ray optics of a new type are first described in Chapter 4 (34 p.). Development of the microstructurization methods has enabled fabrication of diffraction optical elements in the nanometer range and this book is distinguished by detailed analysis of technological aspects of the fabrication of such structures. Classical and new methods in multilayer mirror technology are then described in chapter 5 (27 p.). The last chapter (21 p.) is devoted to some applications of diffraction focusing optics, to X-ray absorption spectroscopy and microscopy. A special attention is devoted to X-ray fluorescence analysis with practical considerations on scanning fluorescence X-ray microprobes. Finally, 277 references are given at the end of a book easy to read, well documented and well illustrated. From this analysis, it is clear that this book concerns, at the top level, researchers and engineers involved in X-ray optics with a special attention to the community working with synchrotron radiation or interested by nanotechnologies. Perhaps some microscopists may regret that a significant subsection (chapter: applications) is not dedicated to soft X-ray microscopy and to its exploding development for the observation and the elemental mapping of wet biological objects with a lateral resolution in the 30-50 nm range. Very significant results have been obtained recently by very active groups in Gottingen, London, Stony Brook, *etc.* The choice of the authors can be admitted and the above remark does not affect the very positive appreciation on a book promised to become an excellent reference book within its assigned goal.

Jacques Cazaux  
LASSI, Université de Reims