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| Nota di contenuto | Cover; Combined Analysis; Title Page; Copyright Page; Table of Contents; Introduction; Acknowledgements; Chapter 1. Some Basic Notions About Powder Diffraction; 1.1. Crystallite, grain, polycrystal and powder; 1.2. Bragg's law and harmonic reflections; 1.2.1. Bragg's law; 1.2.2. Monochromator; 1.2.3. Harmonic radiation components; 1.3. Geometric conditions of diffraction, Ewald sphere; 1.4. Imperfect powders; 1.5. Main diffraction line profile components; 1.5.1. Origin of g(x); 1.5.2. Origin of f(x); 1.5.3. Deconvolution-extraction of f(x) and g (x); 1.6. Peak profile parameters<br>1.7. Modeling of the diffraction peaks1.7.1. Why do we need modeling?; 1.7.2. Modeling of a powder diffraction pattern; 1.8. Experimental geometry; 1.8.1. Curved Position Sensitive detector, asymmetric reflection geometry; 1.8.2. CCD or image plate detector, transmission geometry; 1.8.3. Curved-Area Position-Sensitive detector, transmission geometry; 1.9. Intensity calibration (flat-field); 1.9.1. Counts and intensity; 1.9.2. Flat-field; 1.9.3. PSD detector; 1.9.4. CAPS detector; 1.10. Standard samples; 1.10.1. Laboratory x-ray standards; |

1.10.2. Neutron texture standards

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4.2.1. Pole figures and orientation spaces

Sommario/riassunto

This book introduces and details the key facets of Combined Analysis - an x-ray and/or neutron scattering methodology which combines structural, textural, stress, microstructural, phase, layer, or other relevant variable or property analyses in a single approach. The text starts with basic theories related to diffraction by polycrystals and some of the most common combined analysis instrumental set-ups are detailed. Also discussed are microstructures of powder diffraction profiles; quantitative phase analysis from the Rietveld analysis; residual stress analysis for isotropic and anisotropic ma