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Nota di contenuto	Neutrons and Synchrotron Radiation in Engineering Materials Science; Contents; Preface; List of Contributors; Part I General; 1 Microstructure and Properties of Engineering Materials; 2 Internal Stresses in Engineering Materials; 3 Texture and Texture Analysis in Engineering Materials; 4 Physical Properties of Photons and Neutrons; 5 Radiation Sources; Part II Methods; 6 Introduction to Diffraction Methods for Internal Stress Analyses; 7 Stress Analysis by Angle-Dispersive Neutron Diffraction; 8 Stress Analysis by Energy-Dispersive Neutron Diffraction 9 Residual Stress Analysis by Monochromatic High-Energy X-rays10 Residual Stress Analysis by White High Energy X-Rays; 11 Diffraction Imaging for Microstructure Analysis; 12 Basics of Small-Angle Scattering Methods; 13 Small-Angle Neutron Scattering; 14 Decomposition Kinetics in Copper-Cobalt Alloy Systems: Applications of Small-Angle X-ray Scattering; 15 B3 Imaging; 16 Neutron and Synchrotron-Radiation-Based Imaging for Applications in Materials Science - From Macro- to Nanotomography; 17 -Tomography of

Engineering Materials; 18 Diffraction Enhanced Imaging
Part III New and Emerging Methods19 3D X-ray Diffraction Microscope;
20 3D Micron-Resolution Laue Diffraction; 21 Quantitative Analysis of
Three-Dimensional Plastic Strain Fields Using Markers and X-ray
Absorption Tomography; 22 Combined Diffraction and Tomography;
Part IV Industrial Applications; 23 Diffraction-Based Residual Stress
Analysis Applied to Problems in the Aircraft Industry; 24 Optimization
of Residual Stresses in Crankshafts; Index

Sommario/riassunto

Besides its coverage of the four important aspects of synchrotron sources, materials and material processes, measuring techniques, and applications, this ready reference presents both important method types: diffraction and tomography. Following an introduction, a general section leads on to methods, while further sections are devoted to emerging methods and industrial applications. In this way, the text provides new users of large-scale facilities with easy access to an understanding of both the methods and opportunities offered by different sources and instruments.
