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Released: March 2014

## X-Ray Line Profile Analysis in Materials Science



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Jenő Gubicza (Eötvös Loránd University, Hungary)

X-ray line profile analysis is an effective and non-destructive method for the characterization of the microstructure in crystalline materials. Supporting research in the area of x-ray line profile analysis is necessary in promoting further developments in this field.

**X-Ray Line Profile Analysis in Materials Science** aims to synthesize the existing knowledge of the theory, methodology, and applications of x-ray line profile analysis in real-world settings. This publication presents both the theoretical background and practical implementation of x-ray line profile analysis and serves as a reference source for engineers in various disciplines as well as scholars and upper-level students.

## **Topics Covered:**

- Applications of X-Ray Line Profile Analysis
- Crystallite Size Broadening of Diffraction Line Profiles
- Evaluation Methods of Line Profiles
- Influence of Chemical Heterogeneities
- Kinematical X-Ray Scattering Theory
- Line Profiles Caused by Planar Faults
- · Peak Profile Evaluation for Thin Films
- Strain Broadening of X-Ray Diffractional Peaks
- X-Ray Line Profile Analysis for Single Crystals

 $ISBN: 9781466658523; © 2014; 359 pp. \\ Print: US \$215.00 \mid Perpetual: US \$325.00 \mid Print + Perpetual: US \$430.00$ 

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Jenő Gubicza is a Professor at Eotvos Lorand University in Budapest, Hungary. He received his PhD and Dr. habil degrees in 1997 and 2005, respectively. Prof. Gubicza's main research field is the study of the microstructure by X-ray line profile analysis. His first book entitled, Defect Structure in Nanomaterial, was published in 2012. Prof. Gubicza was awarded the scientific title of Doctor of the Hungarian Academy of Sciences, the Schmid Rezso Prize of Roland Eotvos Physical Society, and the Bolyai-plaquette of Hungarian Academy of Sciences. He has published more than 160 papers that have been cited more than 1600 times.



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