The role of diffraction methods for the solid-state sciences has been pivotal to determining the (micro)structure of a material. Particularly, the expanding activities in materials science have led to the development of new methods for analysis by diffraction.

This book offers an authoritative overview of the new developments in the field of analysis of matter by (in particular X-ray, electron and neutron) diffraction. It is composed of chapters written by leading experts on "modern diffraction methods". The focus in the various chapters of this book is on the current forefront of research on and applications for diffraction methods. This unique book provides descriptions of the "state of the art" and, at the same time, identifies avenues for future research.

The book assumes only a basic knowledge of solid-state physics and allows the application of the described methods by the readers of the book (either graduate students or mature scientists).

Prof. Mittemeijer *and* ***Dr. Welzel****, who has been a Ph.D. student of Prof. Mittemeijer and a member of his department until shortly, are renowned scientists in the field of analysis of materials by diffraction methods. They have contributed considerably to this scientific discipline, as is shown, for example, by their many widely cited publications. This book presents a comprehensive overview based on their insights into the field, as well as those of the selection of key authors who contributed to this project.*

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