

Physical Methods for Materials Characterisation

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The aim of this book is to provide a guide to the techniques of characterisation of the microstructure of materials in order to help the research worker to choose the most appropriate ones. Even with 517 pages, this goal might seem ambitious and I don't think it would have been possible to go beyond an elementary and sometimes superficial level. In fact there is not enough information about each technique to give elements of choice. Another problem is that there is almost nothing about recent developments and up-to-date performances, since most of the references date from the 70's and very few from after 1990.

However, the content of this book is extremely wide, from light microscopy to sputtered neutral mass spectroscopy, so it must be considered as a good support for teaching purposes.

It begins with an introductory chapter about the basics of material and microstructure (in 19 pages !). The second chapter deals with interaction of radiation and particles with matter. The third chapter is more technical, about vacuum problems (pumps and gauges). The description of methods begins with the third chapter dealing with diffraction; the three following chapters classify characterisation methods according to the nature of the incident beam: electromagnetic, electronic, atomic and ionic. The last chapter, a more original one, gives (very) basic information about the use of computer for instrument control, data acquisition and processing.

In conclusion this is a rather attractive book with few equations and a lot of illustrations (sometimes curiously drawn as the "typical" electron energy loss spectra p. 352), which represents a good general review for students or teachers beginning in this field, even if they had better complete their knowledge in more specialised books. However, its interest remains limited for those involved in research work in materials science.

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