

<<纳米技术中的显微学手册>>

图书基本信息

书名：<<纳米技术中的显微学手册>>

13位ISBN编号：9787302097587

10位ISBN编号：7302097585

出版时间：2005-9

出版时间：清华大学出版社

作者：姚楠

页数：396

字数：633000

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

## <<纳米技术中的显微学手册>>

### 内容概要

现代显微学在纳米技术领域的研究和发展中起到“眼睛”和“手”的功能。

迄今，人们仍在孜孜不倦地寻找纳米尺度上的“火眼金睛”。

本手册的目的在于提供关于各种显微学的原理及其在该迅猛发展的领域内应用的综述参考书。

本手册共有22个专题，每一专题都由不同研究领域的、处于世界前沿的科学家撰写。

本书是第2卷，叙述的是电子显微学的内容，共有12个专题。

本书力图使读者对所叙述的方法有一个概念上的理解，而不是只停留在对理论的堆砌上。

在每一个专题里，都会叙述相关的实例及其应用并加以讨论，使读者对电子显微技术能明了和理解；还会进一步展示各章之间的内在联系，表明每一种技术如何在综合性的、复杂的测试中各自扮演独特的角色，解决具体的问题。

<<纳米技术中的显微学手册>>

书籍目录

List of Contributors

1 High\|Resolution Scanning Electron Microscopy and Nanotechnology

1.1 Introduction: Scanning Electron Microscopy and Nanotechnology

1.2 Electron\|Specimen Interactions in Homogeneous Materials

1.2.1 Electron\|Specimen Interactions in Homogeneous Materials

1.2.2 Electron\|Specimen Interactions in Composite Samples

1.3 Instrumentation of/the Scanning Electron Microscope

1.3.1 General Description

1.3.2 Performance of a Scanning Electron Microscope

1.4 The Resolution of Secondary and Backscattered Electron Images

1.5 Contrast Mechanisms of SE and BE Images of Nanoparticles and Other Systems

1.5.1 Small Particle Contrast in High\|Resolution BE Images

1.5.2 Small Particle Contrast in High\|Resolution SE Images

1.5.3 Other Contrast Mechanisms

1.6 Applications to Characterizing Nanophase Materials

1.7 Summary and Perspectives

References

2 High Spatial Resolution Quantitative Electron Beam Microanalysis for Nanoscale Materials

2.1 Introduction

2.2 The Nanomaterials Characterization Challenge: Bulk Nanostructures and Discrete Nanoparticles

2.2.1 Bulk Nanostructures

2.2.2 Nanoparticles

2.3 Physical Basis of the Electron\|Excited Analytical Spectrometries

2.4 Nanoscale Elemental Characterization with High Electron Beam Energy

2.4.1 EELS

2.4.2 X\|ray Spectrometry

2.5 Nanoscale Elemental Characterization with Low and Intermediate Electron Beam Energy

2.5.1 Intermediate Beam Energy X\|ray Microanalysis

2.5.2 Low Beam Energy X\|ray Microanalysis: Bulk Nanostructures

2.5.3 Auger Spectrometry

2.5.4 Elemental Mapping

2.6 Examples of Applications to Nanoscale Materials

2.6.1 Analytical Electron Microscopy

2.6.2 Low Voltage SEM

2.6.3 Auger/X\|ray SEM

2.7 Conclusions

References

3 Characterization of Nano\|Crystalline Materials Using Electron Backscatter Diffraction in the Scanning Electron Microscope

3.1 Introduction

3.2 Historical Development of EBSD

3.3 Origin of EBSD Patterns

3.3.1 Collection of EBSD Patterns

3.3.2 Automated Orientation Mapping

3.4 Resolution of EBSD

3.4.1 Lateral Resolution

3.4.2 Depth Resolution

3.5 Sample Preparation of Nano\|Materials for EBSD

3.6 Applications of EBSD to Nano\|Materials

3.6.1 Heteroepitaxy of Boron Arsenide on \[0001\] 6H\|SiC

3.6.2 Electrodeposited Ni for MEMS Applications

3.6.3 Polycrystalline Si For MEMS Applications

3.7 Summary

References

4 High Resolution Transmission Electron Microscopy

4.1 HRTEM and Nanotechnology

4.2 Principles and Practice of HRTEM

4.2.1 Basis of Image Formation

4.2.2 Definitions of Resolution

4.2.3 Lattice Imaging or Atomic Imaging

4.2.4 Instrumental Parameters

4.2.5 Further Requirements

4.2.6 Milestones

4.3 Applications of HRTEM

4.3.1 Semiconductors

.....

5 Scanning Transmission Electron Microscopy

6 In\|situ Electron Microscopy for Nanomeasurements

7 Environmental Transmission Electron Microscopy in Nanotechnology

8 Electron Nanocrystallography

9 Tomography Using the Transmission Electron Microscope

10 Off\|Axis Electron Holography

11 Sub\|nm Spatially Resolved EELS (Electron Energy\|Loss Spectroscopy): Methods, Theory and Applications

12 Imaging Magnetic Structures Using TEM

Index

<<纳米技术中的显微学手册>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>