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半导体物理性能手册

第3卷 （下册）

HANDBOOK ON PHYSICAL PROPERTIES OF SEMICONDUCTORS

Volume 3
II–VI Compound Semiconductors

Edited by
Sadao Adachi

哈尔滨工业大学出版社
HARBIN INSTITUTE OF TECHNOLOGY PRESS

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原版影印说明

1.《半导体物理性能手册》（5册）是 *Springer Handbook on Physical Properties of Semiconductors* 的影印版。为使用方便，由原版3卷分册影印：

Volume 1 Group IV Semiconductors 为第1卷；

Volume 2 III–V Compound Semiconductors 分为第2卷上册（1～9）、下册（10～18）；

Volume 3 II–VI Compound Semiconductors 分为第3卷上册（1～9）、下册（10～17）。

2. 各册均给出其他卷、册的目录，方便读者了解全套书的内容。

《半导体物理性能手册》介绍了各族半导体、化合物半导体的物理性能，包括：

Structural Properties 结构特性
Thermal Properties 热学性质
Elastic Properties 弹性性质
Phonons and Lattice Vibronic Properties 声子与晶格振动性质
Collective Effects and Related Properties 集体效应及相关性质
Energy-Band Structure: Energy-Band Gaps 能带结构：能带隙
Energy-Band Structure: Electron and Hole Effective Masses 能带结构：电子和空穴的有效质量
Electronic Deformation Potential 电子形变势
Electron Affinity and Schottky Barrier Height 电子亲和能与肖特基势垒高度
Optical Properties 光学性质
Elastooptic, Electrooptic, and Nonlinear Optical Properties 弹光、电光和非线性光学性质
Carrier Transport Properties 载流子输运性质

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HANDBOOK ON PHYSICAL PROPERTIES OF SEMICONDUCTORS

VOLUME 3

II-VI Compound Semiconductors

PREFACE

The progress made in physics and technology of semiconductors depends mainly on three families of materials: the group-IV elemental, III–V, and II–VI compound semiconductors. Almost all II–VI compound semiconductors crystallize either in the zincblende or wurtzite structure. The first research papers on II–VI compound semiconductors date back to the middle of the nineteenth century. In the ensuring hundred years extensive literature has been accumulated as much research and development works are being carried out on these compound semiconductors. At present, the II–VI compound semiconductors are widely used as photodetectors, x-ray sensors and scintillators, phosphors in lighting, displays, etc. New applications are continuously being proposed. Thus, it seems to timely bring together the most up-to-date information on the material and semiconducting properties of II–VI compound semiconductors.

The aim throughout has been to present in convenient form as large amount of accurate, reliable, and up-to-date information on the physical properties of II-VI compound semiconductors for a variety of basic research and device applications. The data on the physical properties of each semiconductor are organized in the same way in order to facilitate searching for information. The physical properties considered in this book can be classified into 12 groups: (1) structural properties; (2) thermal properties; (3) elastic properties; (4) phonons and lattice vibronic properties; (5) collective effects and related properties; (6) energy-band structure:

energy-band gaps; (7) energy-band structure: electron and hole effective mass; (8) electronic deformation potential; (9) electron affinity and Schottky barrier height; (10) optical properties; (11) elastooptic, electrooptic, and nonlinear optical properties; and (12) carrier transport properties.

The extensive bibliography is included for those who wish to find additional information if required. I hope that the book will aid many who want to know various properties of those semiconductor materials in the course of their work. The reader will also find the series books "Group-IV Semiconductors" and "III–V Compound Semiconductors" useful in order to find the needed information quickly on these practically important semiconductors.

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