
**HANDBOOK ON PHYSICAL PROPERTIES
OF SEMICONDUCTORS**

VOLUME 3

II-VI Compound Semiconductors

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OF SEMICONDUCTORS**

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II-VI Compound Semiconductors

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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 ensuing 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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CONTENTS OF OTHER VOLUMES

HANDBOOK ON PHYSICAL PROPERTIES OF SEMICONDUCTORS I Group-IV Semiconductors

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- 1 Diamond (C)
- 2 Silicon (Si)
- 3 Germanium (Ge)
- 4 Gray Tin (α -Sn)
- 5 Cubic Silicon Carbide (3C-SiC)
- 6 Hexagonal Silicon Carbide (2H-, 4H-, 6H-SiC, etc.)
- 7 Rhombohedral Silicon Carbide (15R-, 21R-, 24R-SiC, etc.)

HANDBOOK ON PHYSICAL PROPERTIES OF SEMICONDUCTORS II III–V Compound Semiconductors

Sadao Adachi, Author

- 1 Cubic Boron Nitride (*c*-BN)
- 2 Hexagonal Boron Nitride (*h*-BN)
- 3 Boron Phosphide (BP)
- 4 Boron Arsenide (BAs)
- 5 Wurtzite Aluminum Nitride (*w*-AlN)
- 6 Cubic Aluminum Nitride (*c*-AlN)
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