

Chapter 1

Heterostructure and Quantum Well Physics

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I. INTRODUCTION

Heterostructures are the building blocks of many of the most advanced semiconductor devices presently being developed and produced. They are essential elements of the highest-performance optical sources and detectors [1,2] and are being employed increasingly in high-speed and

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**Norman G. Einspruch, William R.
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Heterostructures and Quantum Devices Norman G. Einspruch, William R. Frensley, 2014-06-28 Heterostructure and quantum mechanical devices promise significant improvement in the performance of electronic and optoelectronic integrated circuits ICs Though these devices are the subject of a vigorous research effort the current literature is often either highly technical or narrowly focused This book presents heterostructure and quantum devices to the nonspecialist especially electrical engineers working with high performance semiconductor devices It focuses on a broad base of technical applications using semiconductor physics theory to develop the next generation of electrical engineering devices The text covers existing technologies and future possibilities within a common framework of high performance devices which will have a more immediate impact on advanced semiconductor physics particularly quantum effects and will thus form the basis for longer term technology development

VLSI Electronics: Heterostructures and quantum devices Norman G. Einspruch, 1981 [Quantum Well and Superlattice Physics](#), 1987 **Quantum Well and Superlattice Physics** Gottfried H. Döhler, Joel N. Schulman, 1987 [Proceedings of the 12th Annual Conference on the Physics and Chemistry of Semiconductor Interfaces, 29-31 January 1985, Fiesta Inn, Tempe, Arizona](#) Robert S. Bauer, 1985 *Fundamentals of Solid State Engineering* Manijeh Razeghi, 2006-06-12 *Fundamentals of Solid State Engineering* 2nd Edition provides a multi disciplinary introduction to Solid State Engineering combining concepts from physics chemistry electrical engineering materials science and mechanical engineering Basic physics concepts are introduced followed by a thorough treatment of the technology for solid state engineering Topics include compound semiconductor bulk and epitaxial thin films growth techniques current semiconductor device processing and nano fabrication technologies Examples of semiconductor devices and a description of their theory of operation are then discussed including transistors semiconductor lasers and photodetectors Revised throughout this second edition includes new chapters on the reciprocal lattice optical properties of semiconductors semiconductor heterostructures semiconductor characterization techniques and an introduction to lasers Additions and improvements have been made to the material on photodetectors and quantum mechanics as well as to the problem sections

New Technical Books New York Public Library, 1994 *Scientific and Technical Aerospace Reports*, 1989 Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database **Encyclopedia of Modern Optics** Robert D. Guenther, Duncan G. Steel, L. P. Bayvel, 2005 Unparalleled reference work for all researchers in field of Optics Fiber Systems Material Science Atomic and Molecular Physics Laser Physics Covers all the sub fields of Optical Physics as well as related fields as Engineering which impact manufacturing and many practical applications Alphabetically arranged for ease of use cross references to aid in tracking down all aspects of a topic under investigation

Dissertation Abstracts International, 1993 [Heterostructure Epitaxy and Devices](#) Josef Novák, Jozef Novák, A.

Schlachetzki,1996-04-30 Heterostructure Epitaxy and Devices contains a selection of the papers contributed to the NATO Advanced Research Workshop of the same name held near Bratislava in October 1995 Some of the leading research teams in the world present their latest findings which are grouped under five headings Epitaxial growth Heterostructures Composite systems Characterization and Devices [Selected Papers on Fundamentals of Optoelectronics](#) Gordon Little,1994 *Who's who in Technology* Louann Chaudier,1986 [Epitaxial Heterostructures: Volume 198](#) Don W. Shaw,1990-11-20 The MRS Symposium Proceeding series is an internationally recognised reference suitable for researchers and practitioners

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