Metalorganic Chemical Vapor Deposition For The Heterostructure Hot Electron Diode

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Compounts Semiconductors Paul H. Holloway 1989-12-27 This book provides a review of the state-of-the-advancing-art in growth, processing and devices from compound semiconductors. Consisting of the proceedings of an important topical conference held at the University of Florida, speakers from both the U.S. and Japan were present. This fascinating work discusses critical issues in growth and characterization by semi-insulating bulk crystals, with particular emphasis placed on the latest modification of gas sources. It includes the advantages, limitations, and techniques pertaining to chemical vapor deposition. This compilation presents the most recent advances in the new technologies involving compound semiconductors, thus it fills an important need in the fast-moving field of microelectronics. This one-of-a-kind resource provides contrasts and insight into U.S. and Japanese technologies and devices as well as indications of future directions. It provides a very up-to-date and comprehensive treatment of world-class scientific and technological developments in this astounding area of major commercial importance. These proceedings will be a useful, indispensable resource for scientific researchers, process engineers, and technology strategists.

Metalorganic Chemical Vapor Deposition for the Heterostructure Hot Electron Diode Mark Andrew Emanuel 1989 Very Good, No Highlights or Markup, all pages are intact.

Direct Growth of InAs/GaAs Heterostructure on Ge Substrate by Metal-organic Chemical Vapor Deposition 2013

applications as well as a survey of the developments that have occurred since the advent of the laser.

Molecular Beam Epitaxy Mohamed Henini 2018-06-27 Molecular Beam Epitaxy (MBE): From Research to Mass Production, Second Edition, provides a comprehensive overview of the latest MBE research and applications in epitaxial growth, along with a detailed discussion and 'how to' on processing molecular or atomic beams that occur on the surface of a heated crystalline substrate in a vacuum. The techniques addressed in the book can be deployed wherever precise thin-film devices with enhanced and unique properties for computing, optics or photonics are required. It includes new semiconductor materials, new device structures that are commercially available, and many that are at the advanced research stage. This second edition covers the advances made by MBE, both in research and in the mass production of electronic and optoelectronic devices. Enhancements include new chapters on MBE growth of 2D materials, Si-Ge materials, AIN and GaN materials, and hybrid ferromagnet and semiconductor structures. Condenses the fundamental science of MBE into a modern reference, speeding up literature review Discusses new materials, novel applications and new device structures, grounding current commercial applications with modern understanding in industry and research Includes coverage of MBE as mass production epitaxial technology and how it enhances processing efficiency and throughput for the semiconductor industry and nanostructured semiconductor materials research community

attracted the focus of study and research in the very recent years due to what they possess of myriad advantages that make them ideal for several applications. Atop said advantages is their peculiar ultra-broadband emission as a result of the inherent inhomogeneous nature of the growth process of quantum dashes. This book investigates a novel multi-stacked chirped InAs/InP quantum dash-in-well laser that introduces an extra layer of inhomogeneity. The investigation of this laser is carried out at two levels: device level and system level. In device level, the fundamental laser diode characterization experiments are performed to extract its principle parameters. Thereafter, the investigation scope is shifted towards pulsed operation modes of higher-ordered duty-cycles and continuous wave operations. The device-level characterization is concluded by investigating the temperature dependent lasing spectral profiles at different geometrical configurations, current injections, and temperatures. Finally, the obtained results are used to optimize different operation parameters that achieved a successful implementation in optical communication systems.

Handbook of Laser Wavelengths Marvin J. Weber 2018-10-08 This volume represents the most complete, up-to-date compilation of wavelengths of lasers in all media. Divided by type - solid, liquid, and gas - and listed in order of increasing wavelength, Handbook of Laser Wavelengths includes: crystalline paramagnetic ion lasers glass lasers color center lasers semiconductor lasers polymer lasers liquid and solid-state dye lasers rare earth liquid lasers neutral atom, ion, and molecular gas lasers extreme ultraviolet and soft X-ray lasers free electron lasers nuclear-pumped lasers lasers in nature lasers without inversion Brief descriptions of each type of laser are presented, followed by tables listing the laser wavelength, lasing element or medium, host, transition, and primary literature citations. A special section on commercial lasers is an added featured. Handbook of La

Ultra-Broadband InAs/InP Quantum-Dash Laser in Optical Communications: Device and System Level Investigation Emad Alkhazraji 2017-02-10 Quantum dash based laser diodes have

GaN and Related Materials Stephen J. Pearton 2021-10-08 Presents views on current developments in heat and mass transfer research related to the modern development of heat exchangers. Devotes special attention to the different modes of heat and mass transfer mechanisms in relation to the new development of heat exchangers design. Dedicates particular attention to the future needs and demands for further development in heat and mass transfer. GaN and related materials are attracting tremendous interest for their applications to high-density optical data storage, blue/green diode lasers and LEDs, high-temperature electronics for high-power microwave applications, electronics for aerospace and automobiles, and stable passivation films for semiconductors. In addition, there is great scientific interest in the nitrides, because they appear to form the first semiconductor system in which extended defects do not severely affect the optical properties of devices. This series provides a forum for the latest research in this rapidly-changing field, offering readers a basic understanding of new developments in recent research. Series volumes feature a balance between original theoretical and experimental research in basic physics, device physics, novel materials and quantum structures, processing, and systems.

Growth of ZnSe/GaAs and ZnSe/Ge Heterostructures by Atmospheric Pressure Metalorganic Chemical Vapor Deposition Method Samitinjoy Pal 1996

Low-pressure Metalorganic Chemical Vapor Deposition of High Gain InGaP/GaAs Heterojunction Bipolar Transistors Qinghong (Jack) Yang 1999

Current Trends in Heterojunction Bipolar Transistors

Metalorganic Vapor Phase Epitaxy (MOVPE) Stuart Irvine 2019-10-07 Systematically discusses the growth method, material properties, and applications for key semiconductor materials MOVPE is a chemical vapor deposition technique that produces single or polycrystalline thin films. As one of the key epitaxial growth technologies, it produces layers that form the basis of many optoelectronic components including mobile phone components (GaAs), semiconductor lasers and LEDs (III-Vs, nitrides), optical communications (oxides), infrared detectors, photovoltaics (II-IV materials), etc. Featuring contributions by an international group of academics and industrialists, this book looks at the fundamentals of MOVPE and the key areas of equipment/safety, precursor chemicals, and growth monitoring. It covers the most important materials from III-V and II-VI compounds to quantum dots and nanowires, including sulfides and selenides and oxides/ceramics. Sections in every chapter of Metalorganic Vapor Phase Epitaxy (MOVPE): Growth, Materials Properties and Applications cover the growth of the particular materials system, the properties of the resultant material, and its applications. The book offers information on arsenides, phosphides, and antimonides; nitrides; lattice-mismatched growth; CdTe, MCT (mercury cadmium telluride); ZnO and related materials; equipment and safety; and more. It also offers a chapter that looks at the future of the technique. Covers, in order, the growth method, material properties, and applications for each material Includes chapters on the fundamentals of MOVPE and the key areas of equipment/safety, precursor chemicals, and growth monitoring Looks at important materials such as III-V and II-VI compounds, quantum dots, and nanowires Provides topical and wide-ranging coverage from well-known authors in the field Part of the Materials for Electronic and Optoelectronic Applications series Metalorganic Vapor Phase Epitaxy (MOVPE): Growth, Materials Prop

Synthesis, Modelling and Characterization of 2D Materials and their Heterostructures Eui-Hyeok Yang 2020-06-19 Synthesis, Modelling and Characterization of 2D Materials and Their Heterostructures provides a detailed discussion on the multiscale computational approach surrounding atomic, molecular and atomic-informed continuum models. In addition to a detailed theoretical description, this book provides example problems, sample code/script, and a discussion on how theoretical analysis provides insight into optimal experimental design. Furthermore, the book addresses the growth mechanism of these 2D materials, the formation of defects, and different lattice mismatch and interlayer interactions. Sections cover direct band gap, Raman scattering, extraordinary strong light matter interaction, layer dependent photoluminescence, and other physical properties. Explains multiscale computational techniques, from atomic to continuum scale, covering different time and length scales Provides fundamental theoretical insights, example problems, sample code and exercise problems Outlines major characterization and synthesis methods for different types of 2D materials Chemical Vapour Deposition (CVD) Kwang-Leong Choy 2019-06-15 This book offers a timely and complete overview on chemical vapour deposition (CVD) and its variants for the processing of nanoparticles, nanowires, nanotubes, nanocomposite coatings, thin and thick films, and composites. Chapters discuss key aspects, from processing, material structure and properties to practical use, cost considerations, versatility, and sustainability. The author presents a comprehensive overview of CVD and its potential in producing high performance, cost-effective nanomaterials and thin and thick films. Features Provides an up-to-date introduction to CVD technology for the fabrication of nanomaterials, nanostructured films, and composite coatings Discusses processing, structure, functionalization, properties, and use in clean energy, engineering, and biomedical grand challenges Covers thin and thick films and composites Compares CVD with other processing techniques in terms of structure/properties, cost, versatility, and sustainability Kwang-Leong Choy is the Director of the UCL Centre for Materials Discovery and Professor of Materials Discovery in the Institute for Materials Discovery at the University College London. She earned her D.Phil. from the University of Oxford, and is the recipient of numerous honors including the Hetherington Prize, Oxford Metallurgical Society Award, and Grunfeld Medal and Prize from the Institute of Materials (UK). She is an elected fellow of the Institute of Materials, Minerals and Mining, and the Royal Society of Chemistry. The Growth of Aluminum Gallium Arsenide/gallium Arsenide Graded Barrier Quantum Well Heterostructure Lasers with Various Buffer Layer Structures by Metalorganic Chemical Vapor Deposition Michael Eugene Givens 1988

Characterization of III-V Compound Semiconductor Heterostructures Grown by Metalorganic Chemical Vapor Deposition Jongryoul Kim 1991 III-V compound semiconductor materials have had much attention because of their application to high speed electronic and optoelectronic devices. For achieving these purposes, it is required to produce high quality samples with uniform layer thickness, no defects, and abrupt interfaces. For this metalorganic chemical vapor deposition (MOCVD) is one of the most important growth methods. In this study, transmission electron microscopy (TEM) was used for the characterization of epilayer structures grown by the MOCVD technique. High resolution electron microscopy (HREM), the two beam technique and the convergent beam technique (CBED) were used. Cross sectional, plan view and cleavage samples using the ion milling or chemical etching method were used for TEM sample preparation. Tetragonal distortion occurs in the strained layer superlattice (SLS). Misfit dislocations are found above a certain layer thickness (critical thickness) and the critical thickness is related to the total strain state in SLS. Composition measurements of In\$sb{rm 1-x}\$Ga\$sb{rm x}\$As in SLS using TEM has restrictions because of the misfit strain and the similarity of atomic scattering factors of Ga and In. But a low In concentration layer can be determined from the (002) dark field intensity ratio. The interface quality of heterostructures can be distinguished by 5 beam, 9 beam or more conditions at a (100) zone axis. Digital vector pattern recognition was found to be a powerful tool for quantization of interface quality.

Quantum Well Lasers Peter S. Zory, Jr. 2012-12-02 This book provides the information necessary for the reader to achieve a thorough understanding of all aspects of QW lasers - from the basic mechanism of optical gain, through the current technological state of the art, to the future technologies of quantum wires and quantum dots. In view of the growing importance of QW lasers, this book should be read by all those with an active interest in laser science and technology, from the advanced student to the experienced laser scientist. * The first comprehensive book-length treatment of quantum well lasers * Provides a detailed treatment of quantum well laser basics * Covers strained quantum well lasers * Explores the different state-of-the-art quantum well laser types * Provides key information on future laser technologies

Integrated Optics: Theory and Technology Robert G. Hunsperger 2013-11-11 Our intent in producing this book was to provide a text that would be comprehensive enough for an introductory course in integrated optics, yet concise enough in its mathematical derivations to be easily readable by a practicing engineer who desires an overview of the field. The response to the first edition has indeed been gratifying; unusually strong demand has caused it to be sold out during the initial year of publication, thus providing us with an early opportunity to produce this updated and improved second edition. This development is fortunate, because integrated optics is a very rapidly progressing field, with significant new research being regularly reported. Hence, a new chapter (Chap. 17) has been added to review recent progress and to provide numerous additional references to the relevant technical literature. Also, thirty-five new problems for practice have been included to supplement those at the ends of chapters in the first edition. Chapters I through 16 are essentially unchanged, except for brief updating revisions and corrections of typographical errors. Because of the time limitations imposed by the need to provide an uninterrupted supply of this book to those using it as a course text, it has been possible to include new references and to briefly describe recent developments only in Chapter 17. However, we hope to provide details of this continuing progress in a future edition.

Semiconductor Laser Diode Arrays by MOCVD (Metalorganic Chemical Vapor Deposition). James J. Coleman 1987 The purpose of this program is to develop the metalorganic chemical vapor deposition (MOCVD) epitaxial growth process for semiconductor heterostructure laser diode arrays. These laser diode arrays are intended to be used as an optical pump for solid state yttrium aluminum garnet (YAG) lasers. In particular, linear uniform arrays having high output power, high efficiency, low laser threshold current density and precisely controlled emission wavelength are required. There are three technical problems associated with this task. The first problem is development of individual laser diode device structures which satisfy the requirements for efficiency, threshold and wavelength control and are suitable for incorporation into laser arrays. There are a number of possible structures varying in complexity from conventional five-layer double heterostructures having alloy AlGaAs active regions to very sophisticated quantum well heterostructures (QWH). The second problem is an analytical study of the waveguide properties of multi-element laser arrays. Simple arrays of conventional double heterostructure laser diodes have been studied but extension of this work to other laser diode geometries is non-trivial. Preliminary and optimum geometries for the individual structures and the photomasks used for device processing require some modeling of the optical properties of these arrays. The third problem, and the major point of this entire program, is experimental development of suitably designed individual laser diode structures in a well modeled multi-element array. (rh).

Distributed Feedback Ridge Waveguide and Step-graded Separate Confinement Quantum Well Heterostructure Lasers Grown by Metalorganic Chemical Vapor Deposition Linda Michelle Miller 1992 III-Nitride Electronic Devices Rongming Chu 2019-10 III-Nitride Electronic Devices, Volume 102, emphasizes two major technical areas advanced by this technology: radio frequency (RF) and power electronics applications. The range of topics covered by this book provides a basic understanding of materials, devices, circuits and applications while showing the future directions of this technology. Specific chapters cover Electronic properties of III-nitride materials and basics of III-nitride HEMT, Epitaxial growth of III-nitride electronic devices, III-nitride microwave power transistors, III-nitride millimeter wave transistors, III-nitride lateral transistor power switch, III-nitride vertical devices, Physics-Based Modeling, Thermal management in III-nitride HEMT, RF/Microwave applications of IIInitride transistor/wireless power transfer, and more. Presents a complete review of III-Nitride electronic devices, from fundamental physics, to applications in two key technical areas - RF and power electronics Outlines fundamentals, reviews state-of-the-art circuits and applications, and introduces current and emerging technologies Written by a panel of academic and industry experts in each field Optical Fibres and Sources for Communications M.J. Adams 2013-11-11 In the last few years the subject of optical cornmunications has moved rapidly from being a promising research area to a practical reality already being installed and carrying traffic in trunk networks in many countries. At the same time new applications for fibre technology are emerging and are placing new demands on the system components. In telecommunications there is a steady increase of interest in the use of fibres for undersea cables, in local area networks and wideband links, and a little further ahead the possibility of coherent communications systems. With an optical carrier bandwidth of 200 THz, today's maximum bit rates of the order of Gb s-l do not approach the limits of the medium, and questions about the ultimate limits of optical communications are already being asked. On a different front, the rapid advance of fibre sensors, previously drawing heavily on the communications technology, is becoming a major driving force in the development of fibres and other components. This picture of dramatic growth in optical technology gives rise to other phenomena. A profusion of small companies mushrooms to meet the demands of specific market areas, each such company formed around a nucleus of experienced personnel from the established research groups. Multi- nationals jostle for position in the optoelectronics marketplace and price wars develop as fibre costs fall. University groups expand with government and industrial funding in attempts to maintain long-term research options and produce trained personnei.

 ${\bf Scientific\ and\ Technical\ Aerospace\ Reports\ } 1994$

Superior Material Qualities and Transport Properties of InGaN Channel Heterostructure Grown by Pulsed Metal Organic Chemical Vapor Deposition *Project Supported by the National Natural Science Foundation of China (Grant Nos. 61306017, 61334002, 61474086, and 11435010) and the Young Scientists Fund of the National Natural Science Foundation of China (Grant No. 61306017). 2015 Abstract: Pulsed metal organic chemical vapor deposition is introduced into the growth of InGaN channel heterostructure for improving material qualities and transport properties. High-resolution transmission electron microscopy imaging shows the phase separation free InGaN channel with smooth and abrupt interface. A very high two-dimensional electron gas density of approximately 1.85 × 10 13 cm -2 is obtained due to the superior carrier confinement. In addition, the Hall mobility reaches 967 cm 2 /V·s, owing to the suppression of interface roughness scattering. Furthermore, temperature-dependent Hall measurement results show that InGaN channel heterostructure possesses a steady two-dimensional electron gas density over the tested temperature range, and has superior transport properties at elevated temperatures compared with the traditional GaN channel heterostructure. The gratifying results imply that InGaN channel heterostructure grown by pulsed metal organic chemical vapor deposition is a promising candidate for microwave power devices.

Al0.5Ga0.5As-GaAs Heterojunction Phototransistors Grown by Metalorganic Chemical Vapor Deposition R. A. Milano 1979

Heterostructures and Quantum Devices Norman G. Einspruch 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.

Transmission Electron Microscopy Analysis of Indium Based Heterostructures Grown by Metalorganic Chemical Vapor Deposition Mark Edward Webster 1988

Metal-Organic Chemical Vapor Deposition of Electronic Ceramics II: Volume 415 Seshu B. Desu 1996-02-28 The use of high-performance ceramic materials in microelectronics holds the potential for the

development of a wide range of novel, high-value products. For example, ferroelectric ceramic capacitors are key to the development of high-density ferroelectric nonvolatile memory (FRAM). High-dielectric constant para-electric capacitors are potentially useful for the production of high-density dynamic random access memory (DRAM) and for decoupling capacitors in high-speed microprocessors. Electro-optic materials are useful as waveguides, tunable filters and switches in advance communication applications. Researchers come together in this book to discuss both the application of metal-organic chemical vapor deposited (MOCVD) materials to microelectronics and the 'nuts and bolts' of the technique. A wide variety of opto-electronic, superconducting, ferroelectric and other advanced ceramic materials are discussed. Problems of dealing with low-volatility precursors, design of new precursors, and characterization of CVD processes are addressed. Topics include: nonoxide ceramics; precursor chemistry and delivery; process analysis and characterization; and oxide ceramics.

Chemical Vapor Deposition: 1960-1980 Donald T. Hawkins 1981-11-30

Nitride Wide Bandgap Semiconductor Material and Electronic Devices Yue Hao 2016-11-03 This book systematically introduces physical characteristics and implementations of III-nitride wide bandgap semiconductor materials and electronic devices, with an emphasis on high-electron-mobility transistors (HEMTs). The properties of nitride semiconductors make the material very suitable for electronic devices used in microwave power amplification, high-voltage switches, and high-speed digital integrated circuits.

Physics and Technology of Semiconductor Thin Film-Based Active Elements and Devices Halyna Khlyap 2009-04-03 "This well organized reference book covers the newest and most important practically applicable results in thin film-based semiconductor (A2B6-A4B6 and chalcogenide) sensors, heterojunction-based active elements and other devices. This book is written for "

Materials Studies for Heterojunction Structures Grown by Metalorganic Chemical Vapor Deposition P. D. Dapkus 1986 The present program was structured to understand the limitations imposed by the use of an atmospheric pressure Metal Organic Chemical Vapor Deposition system on the growth of ultrathin abrupt heterostructure devices. During the course of these tudy a great deal of work that sheds light on this subject was published. As a result of these new findings and as a result of findings generated in this program a rather complete understanding of these limitations is now available. In particular we have investigated various aspects of reactor design to determine the role that they play in determining the ultimate capabilities of the process. We have also investigated the effect of growth interruption on the quality of heterojunctions and quantum wells and the role of transients generated by pressure and flow imbalances on the transient growth rate involved in the formation of ultrathin layers in an atmospheric pressure system. We have concluded that it is possible to grow high quality multiple quantum well structures by MOCVD over a thickness range 20 A to 500 A when appropriate measures are taken to control imbalances in the system. We have shown that interruption of the growth poses no particular difficulty to the fabrication of quantum well structures and in fact there is an indication that it is an indication that it is beneficial. We are not at present able to shed any further light on the applicability of MOCVD to the fabrication of HEMT structures owing to the lack of an available domestic source of high purity trimethylgallium.

Metalorganic Chemical Vapor Deposition and Its Application to the Growth of the Heterostructure Hot Electron Diode Mark Andrew Emanuel 1988 Metalorganic chemical vapor deposition (MOCVD) is an epitaxial crystal growth technique capable of producing high-quality compound semiconductors in thick or thin layers with abrupt junctions, excellent areal uniformity, and precisely controlled thickness, doping and composition. In this work the desired characteristics of an MOCVD system are described, and design criteria necessary for their implementation are identified. Special emphasis is placed on defensive design strategies intended to limit the extent of system perturbation due to various component failure modes and normal maintenance procedures. The design of reactor computer control software is also considered, and algorithms for the growth of layers graded in both doping and composition are presented.

Metal-organic Chemical Vapor Deposition of Electronic Ceramics 1996

Properties of Synthetic Two-Dimensional Materials and Heterostructures Yu-Chuan Lin 2018-10-23 This book represents a significant advance in our understanding of the synthesis and properties of two-dimensional (2D) materials. The author's work breaks new ground in the understanding of a number of 2D crystals, including atomically thin transition metal dichalcogenides, graphene, and their heterostructures, that are technologically important to next-generation electronics. In addition to critical new results on the direct growth of 2D heterostructures, it also details growth mechanisms, surface science, and device applications of "epi-grade" 2D semiconductors, which are essential to low-power electronics, as well as for extending Moore's law. Most importantly, it provides an effective alternative to mechanically exfoliate 2D layers for practical applications.

Low Temperature Electronics Edmundo A. Gutierrez 2001 Low Temperature Electronics: Physics, Devices, Circuits, and Applications summarizes the recent advances in cryoelectronics starting from the fundamentals in physics and semiconductor devices to electronic systems, hybrid superconductor-semiconductor technologies, photonic devices, cryocoolers and thermal management. Furthermore, this book provides an exploration of the currently available theory, research, and technologies related to cryoelectronics, including treatment of the solid state physical properties of the materials used in these systems. Current applications are found in infrared systems, satellite communications and medical equipment. There are opportunities to expand in newer fields such as wireless and mobile communications, computers, and measurement and scientific equipment. Low temperature operations can offer certain advantages such as higher operational speeds, lower power dissipation, shorter signal transmission times, higher semiconductor and metal thermal conductivities, and improved digital and analog circuit performance. The computer, telecommunication, and cellular phone market is pushing the semiconductor industry towards the development of very aggressive device and integrated circuit fabrication technologies. This is taking these technologies towards the physical miniaturization limit, where quantum effects and fabrication costs are becoming a technological and economical barrier for further development. In view of these limitations, operation of semiconductor devices and circuits at low temperature (cryogenic temperature) is studied in this book. * It is a book intended for a wide audience: students, scientists, technology development engineers, private companies, universities, etc. * It contains information which is for the first time available as an all-in-one source; Interdisciplinary material is arranged and made compatible in this book * It is a must as reference source

The simulation, processing, and characterization of AlGaN/GaN heterojunction transistors grown by metalorganic chemical vapor deposition Bryan Stephen Shelton 2000 Microanalysis and Characterization of III-V Heterostructures Grown by Metalorganic Chemical Vapor Deposition (MOCVD) Shwu-Jen Jeng 1986

A1GaAs GaAs InGaAs InAs Quantum Dot Coupled to Quantum Well Heterostructure Lasers by Low Pressure Metalorganic Chemical Vapor Deposition Theodore Chung 2003 Growth of InP-based Materials and Heterostructures Using Metalorganic Vapor Phase Epitaxy for High Frequency Device Applications Kyushik Hong 1996

Growth and Characterization of High Quality GaSb/GaAs Heterostructure by Metal-Organic Chemical Vapor Deposition Method for Post CMOS Application []] 2017