

1. Record Nr.	UNINA99111140060603321
Titolo	III-nitride : semiconductor materials / / editor, Zhe Chuan Feng
Pubbl/distr/stampa	London, : Imperial College Press, c2006
ISBN	9786611867218 9781281867216 1281867217 9781860949036 1860949037
Edizione	[1st ed.]
Descrizione fisica	1 online resource (440 p.)
Altri autori (Persone)	FengZhe Chuan
Disciplina	541.377 541/.377 621.38152
Soggetti	Semiconductors - Materials Nitrides
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	CONTENTS ; Preface ; Chapter 1 Hydride vapor phase epitaxy of group III nitride materials ; 1.Introduction ; 2.Experiment ; 3.Material Properties ; 3.1. Undoped GaN layers ; 3.2. Si-doped GaN layers ; 3.3. Mg-doped GaN layers ; 3.4. Zn-doped GaN layers ; 3.5. AlN layers 3.6. AlGaIn layers 3.7. InN and InGaIn layers ; 4.New directions in HVPE development ; 4.1. Large area and multi wafer HVPE growth ; 4.2. Multi-layer structures ; 4.3. P-n junctions ; 4.4. Structures with two dimensional carrier gas ; 4.5. Nano structures and porous materials 5.Applications of HVPE grown group III nitride materials 5.1. Substrate applications ; 5.1.1. Template substrates ; 5.1.2. Free-standing substrates ; 5.1.3. Bulk substrates ; 5.2. Device Applications

; 6. Conclusions

Chapter 2 Planar MOVPE technology for epitaxy of III-nitride materials

1. History of Reactor Development for III-Nitrides

; 2. Types of Planar Reactors ; 3. Reactor Modeling

; 3.1. Growth Kinetics of Group-III Nitride MOVPE

; 3.2. Modeling of MOVPE processes

3.3. Horizontal Tube Reactors: Flow Dynamics and Reactor Technology

3.4. Planetary Reactors: Transport Phenomena & Parameter

Dependencies ; 4. In-

situ Technology in Nitride MOCVD Systems

; 5. The Mass Production of GaN and Related Materials

; 5.1. Optoelectronic Device Structures

5.2. Growth in the 8x4 inch Configuration

Sommario/riassunto

III-Nitride semiconductor materials - (Al, In, Ga)N - are excellent wide band gap semiconductors very suitable for modern electronic and optoelectronic applications. Remarkable breakthroughs have been achieved recently, and current knowledge and data published have to be modified and upgraded. This book presents the new developments and achievements in the field. Written by renowned experts, the review chapters in this book cover the most important topics and achievements in recent years, discuss progress made by different groups, and suggest future directions. Each chapter also describes th
