

1. Record Nr.	UNINA9910145695203321
Autore	Feenstra Randall M
Titolo	Porous silicon carbide and gallium nitride [[electronic resource]] : epitaxy, catalysis, and biotechnology applications / / Randall M. Feenstra, Colin E.C. Wood
Pubbl/distr/stampa	Chichester, England ; ; Hoboken, NJ, : John Wiley & Sons, c2008
ISBN	1-281-32245-8 9786611322458 0-470-75181-9 0-470-75182-7
Descrizione fisica	1 online resource (340 p.)
Altri autori (Persone)	WoodColin E. C
Disciplina	621.3815/2 621.38152
Soggetti	Silicon carbide Gallium nitride Semiconductors Electronic books.
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 (p. 308-310) and index.
Nota di contenuto	Porous Silicon Carbide and Gallium Nitride; Contents; Preface; 1 Porous SiC Preparation, Characterization and Morphology; 1.1 Introduction; 1.2 Triangular Porous Morphology in n-type 4H-SiC; 1.2.1 Crystal Anodization; 1.2.2 Description of the Porous Structure; 1.2.3 Model of the Morphology; 1.3 Nano-columnar Pore Formation in 6H-SiC; 1.3.1 Experimental; 1.3.2 Results; 1.3.3 Discussion; 1.4 Summary; Acknowledgements; References; 2 Processing Porous SiC: Diffusion, Oxidation, Contact Formation; 2.1 Introduction; 2.2 Formation of Porous Layer; 2.3 Diffusion in Porous SiC; 2.4 Oxidation 2.5 Contacts to Porous SiCAcknowledgements; References; 3 Growth of SiC on Porous SiC Buffer Layers; 3.1 Introduction; 3.2 SiC CVD Growth; 3.3 Growth of 3C-SiC on Porous Si via Cold-Wall Epitaxy; 3.3.1 Growth on Porous Si Substrates; 3.3.2 Growth on Stabilized Porous Si Substrates; 3.4 Growth of 3C-SiC on Porous 3C-SiC; 3.4.1 Growth in LPCVD Cold-wall Reactor; 3.5 Growth of 4H-SiC on Porous 4H-SiC; 3.6

Conclusion; Acknowledgements; References; 4 Preparation and Properties of Porous GaN Fabricated by Metal-Assisted Electroless Etching; 4.1 Introduction
4.2 Creation of Porous GaN by Electroless Etching
4.3 Morphology Characterization; 4.3.1 Porous GaN Derived from Unintentionally Doped Films; 4.3.2 Transmission Electron Microscopy (TEM) Characterization; 4.4 Luminescence of Porous GaN; 4.4.1 Cathodoluminescence (CL) of Porous GaN; 4.4.2 Photoluminescence (PL) of Porous GaN; 4.5 Raman Spectroscopy of Porous GaN; 4.5.1 Characteristics of Raman scattering in GaN; 4.5.2 Raman Spectra of Porous GaN Excited Below Band Gap; 4.6 Summary and Conclusions; Acknowledgements; References; 5 Growth of GaN on Porous SiC by Molecular Beam Epitaxy
5.1 Introduction
5.2 Morphology and Preparation of Porous SiC Substrates; 5.2.1 Porous Substrates; 5.2.2 Hydrogen Etching; 5.3 MBE Growth of GaN on Porous SiC Substrates; 5.3.1 Experimental Details; 5.3.2 Film Structure; 5.3.3 Film Strain; 5.4 Summary; Acknowledgements; References; 6 GaN Lateral Epitaxy Growth Using Porous SiNx, TiNx and SiC; 6.1 Introduction; 6.2 Epitaxy of GaN on Porous SiNx Network; 6.2.1 Three-step Growth Method; 6.2.2 Structural and Optical Characterization; 6.2.3 Schottky Diodes (SDs) on Undoped GaN Templates; 6.2.4 Deep Level Transition Spectrum
6.3 Epitaxial Lateral Overgrowth of GaN on Porous TiN
6.3.1 Formation of Porous TiN; 6.3.2 Growth of GaN on Porous TiN; 6.3.3 Characterization by XRD; 6.3.4 Characterization by TEM; 6.3.5 Characterization by PL; 6.4 Growth of GaN on Porous SiC; 6.4.1 Fabrication of Porous SiC; 6.4.2 GaN Growth on Hydrogen Polished Porous SiC; 6.4.3 GaN Growth on Chemical Mechanical Polished Porous SiC; Acknowledgements; References; 7 HVPE Growth of GaN on Porous SiC Substrates; 7.1 Introduction; 7.2 PSC Substrate Fabrication and Properties; 7.2.1 Formation of Various Types of SPSC Structure; 7.2.2 Dense Layer
7.2.3 Monitoring of Anodization Process

Sommario/riassunto

Porous Silicon Carbide and Gallium Nitride: Epitaxy, Catalysis, and Biotechnology Applications presents the state-of-the-art in knowledge and applications of porous semiconductor materials having a wide band gap. This comprehensive reference begins with an overview of porous wide-band-gap technology, and describes the underlying scientific basis for each application area. Additional chapters cover preparation, characterization, and topography; processing porous SiC; medical applications; magnetic ion behavior, and many more
