

# 目次

1.	Si基板上GaAs系レーザ特性及び信頼性改善に関する研究	1
2.	太陽電池用半導体カーボン薄膜に関する研究	94
3.	CBEを用いた化合物半導体の結晶成長に関する研究	191
4.	Si基板上GaAs系化合物半導体内欠陥の水素プラズマによる不活性化に関する研究	287
5.	本研究に関する発表・論文	405

## [GaAs, InGaP, 太陽電池システム]

[1]	Efficient Solar Water Splitting, Exemplified by RuO <sub>2</sub> -Catalyzed AlGaAs/Si Photoelectrolysis	405
[2]	Stable Cycling Behavior of the Light Invariant AlGaAs/Si/metal Hydride Solar Cell	410
[3]	Improvement of the MOCVD-grown InGaP-on-Si towards High-Efficiency Solar Cell Application	420
[4]	Low Temperature Growth of GaAs Polycrystalline Films on Glass Substrate for Space Solar Cell Application	426
[5]	A Detailed Study of H <sub>2</sub> Plasma Passivation Effects on GaAs/Si Solar Cell	431
[6]	Surface and Bulk Passivation of Defects in GaAs/Si by RF Plasma-Assisted MOCVD	438
[7]	PH <sub>3</sub> /H <sub>2</sub> Plasma Passivation of Metal-Organic Chemical Vapor Deposition Grown GaAs on Si	443
[8]	Direct Bonding of Epitaxial GaAs Film on Si Substrate with Improved Optical Properties	449
[9]	Impurity Reduction and Crystalline Quality Improvement due to Isovalent Doping (In) in GaAs Epilayers on Si Substrate by Chemical Beam Epitaxy	452
[10]	Growth and Characterization of GaAs Epitaxial Layers on Si/Porous Si/Si Substrate by Chemical Beam Epitaxy	456
[11]	High-Quality Thin Film GaAs Bonded to Si using SeS <sub>2</sub>	460
[12]	Growth of Stress-Reduced GaAs on Si Substrate by using Epitaxial Lift-off and MOCVD Regrowth	468
[13]	Growth of Stress-Reduced GaAs on GaAs/Si Structure by Metalorganic Chemical Vapor Deposition	473
[14]	Electrical Characteristics Bonded to Si Using SeS <sub>2</sub> Technique	476

## [GaN]

[1]	Thermal Stability of Pd/Al <sub>0.11</sub> Ga <sub>0.89</sub> N Schottky Diodes	480
[2]	Bonding of GaN with Si Using Selenium Sulphide (SeS <sub>2</sub> ) and Laser Lift-off	484
[3]	Fabrication of Light Emitting Diodes with GaInN Multi-Quantum Wells on Si (111) Substrates by MOCVD	488
[4]	Electrical Characteristics of Schottky Contacts on GaN and /Al <sub>0.11</sub> Ga <sub>0.89</sub> N	492
[5]	Effects of Annealing on Ti, Pd, and Ni/n-/Al <sub>0.11</sub> Ga <sub>0.89</sub> N Schottky Diodes	495
[6]	Investigations on Strained AlGaIn/GaN/Sapphire and GaInN Multi-Quantum-	

	Well Surface LEDs Using AlGaIn/GaN Bragg Reflectors .....	503
[7]	Characterizations of Recessed Gate AlGaIn/GaN HEMTs on Sapphire .....	510
[8]	GaN MESFETs on (111) Si Substrate Grown by MOCVD .....	516
[9]	リセスゲートを用いたサファイア基板上の AlGaIn/GaN HEMTの諸特性 .....	519
 [Carbon]		
[1]	Effect of Radio Frequency Power on the Properties of Hydrogenated Amorphous Carbon Films Grown by Radio Frequency Plasma-Enhanced Chemical Vapor Deposition .....	527
[2]	Low Density of Defect States in Hydrogenated Amorphous Carbon Thin Films Grown by Plasma-Enhanced Chemical Vapor Deposition .....	533
[3]	Photovoltaic and Spectral Photoresponce Characteristics of n-C/p-C Solar Cell on Si Substrates .....	536
[4]	Camphoric Carbon Soot: A New Taget for Deposition of Diamond-like Carbon Films by Pulsed Laser Ablation .....	539
[5]	Solar Cells Based on Carbon Thin Films .....	543
[6]	Growth of Nanocrystalline Diamond Films by Biased Enhanced Microwave Plasma Chemical Vapor Deposition: A Different Regime of Growth .....	551
[7]	Growth of Nanocrystalline Diamond Films by Biased Enhanced Microwave Plasma Chemical Vapor Deposition .....	554
[8]	Structural and Optical Properties of Diamond and Nano-Diamond Films by Microwave Plasma Chemical Vapor Deposition .....	559
[9]	High Compressive Stress in Nanocrystalline Diamond Films Grown by Microwave Plasma Chemical Vapor Deposition .....	566
[10]	Biased Enhanced Growth of Nanocrystalline Diamond Films Grown by Microwave Plasma Chemical Vapor Deposition .....	572
[11]	Strong Adhension in Nanocrystalline Diamond Films on Silicon Substrates .....	577
 [TiO <sub>2</sub> ]		
[1]	Refractive index and Degree of Inhomogeneity of Nanocrystalline TiO <sub>2</sub> Thin Films: Effects of Substrate and Annealing Temperature .....	582
[2]	Investigation of the Effect of Sol Processing Parameters on the Photoelectrical Properties of Dye-sensitized TiO <sub>2</sub> Solar Cells .....	590
 [制御]		
[1]	Design of Robust Repetitive Control System for Multiple Period .....	598
[2]	多入力多出力リップルフリーデッドビートコントローラの パラメトリゼーション .....	604