

# 目次

1.	Si基板上GaAs系面発光レーザに関する研究	1
2.	MOCVD法によるサファイア基板上 GaN系青色面発光レーザーに関する研究	95
3.	RFプラズマCVD法によるカーボン薄膜の作成および評価	174
4.	色素増感TiO <sub>2</sub> 太陽電池に関する研究	236
5.	本研究に関する発表・論文	304
[GaAs, InGaP, 太陽電池システム]		
[1]	Study of Hydrogen Plasma Passivation Effects on Al <sub>x</sub> Ga <sub>1-x</sub> As-on-Si Solar Cells	305
[2]	Improvement of the MOCVD-Grown InGaP/Si Substrate Towards High Efficiency Solar Cell Application	307
[3]	Growth of GaInP with an intermediate GaP layer on Si by Chemical Beam Epitaxy	309
[4]	A Detailed Study of H Plasma Passivation Effects on GaAs-on-Si Solar Cell	311
[5]	Optical and Electrical Properties of GaAs Solar Cell by Bonding of GaAs on Si - A Futuristic Approach	313
[6]	High Quality Thin Film GaAs Bonded to Si Using SeS <sub>2</sub> - A New Approach for High Efficiency Tandem Solar Cells	315
[7]	Research for a Drive of Ozonizer by Using a Photovoltaic Generation System	317
[8]	Hydrogenation of GaAs-on-Si Schottky Diodes by PH <sub>3</sub> -added H Plasma	320
[9]	Stress Reduction and Structural Quality Improvement due to In Doping in GaAs/Si	321
[10]	Photoluminescence Studies of Hydrogen-Passivated Al <sub>0.13</sub> Ga <sub>0.87</sub> As Grown on Si Substrate by Metalorganic Chemical Vapor Deposition	326
[11]	Hydrogen Plasma Passivation and Improvement of the Photovoltaic Properties of a GaAs Solar Cell Grown on Si Substrate	329
[12]	Surface and Bulk Passivation of GaAs Solar Cell on Si Substrate H <sub>2</sub> +PH <sub>3</sub> Plasma	331
[13]	Hydrogen Plasma Passivation of GaAs on Si Substrates for Solar Cell Fabrication	334
[14]	Light Invariant, Efficient, Multiple Band Gap AlGaAs/Si/metal Hydride Solar Cell	338
[15]	High-Quality GaAs on Si Substrate by the Epitaxial Lift-Off Technique using SeS <sub>2</sub>	341
[16]	Surface and Bulk Passivation Effect of GaAs Grown on Si Substrates by SeS <sub>2</sub> Treatment	344
[17]	有機金属気相成長法によるSi基板上GaAs系面発光レーザ に関する研究	348
[18]	Si基板上GaAs系レーザに関する研究	354
[19]	Thermal Behavior of GaAs-Based Laser on Si Substrate	361

[20]	Si基板上赤外面発光レーザ用半導体多層膜反射鏡 .....	363
[21]	Temperature Dependence of Threshold Current and Quantum Efficiency of Self-Formed GaAs island Laser on a Si Substrate .....	369
[22]	Gain Coefficient, Quantum Efficiency, Transparency Current Density, and Internal Loss of the AlGaAs-GaAs-Based Lasers on Si Substrate .....	375
[GaN]		
[1]	Analysis of Hole Transport in Cubic Phase of p-type GaN by Relaxation Time Approximation .....	378
[2]	Optical Absorption and Photoluminescence Studies of n-type GaN .....	384
[3]	High-Mobility AlGaN/GaN Heterostructures Grown on Sapphire by Metalorganic Chemical Vapor Deposition .....	387
[4]	Electron Mobility on AlGaN/GaN Heterostructure Interface .....	391
[5]	High-Quality GaN on Si Substrate Using AlGaN/AlN Intermediate Layer .....	395
[6]	GaN on Si Substrate with AlGaN/AlN Intermediate Layer .....	400
[7]	Si基板上GaNの暗転密度観察 .....	403
[8]	High-Quality InGaN Light Emitting Diode Grown on GaN/AlGaN Distributed Bragg Reflector .....	410
[9]	Effect of RIE Damage to Blue and Green Light Emitting Diodes .....	413
[10]	InGaN Light Emitting Diode with GaN/AlGaN Distributed Bragg Reflector .....	416
[11]	青色面発光レーザ用GaN/AlGaN半導体多層膜反射鏡の作製 .....	418
[12]	Characteristics of a GaN Metal Semiconductor Field-Effect Transistor Grown on a Sapphire Substrate by Metalorganic Chemical Vapor Deposition .....	424
[13]	Recessed Gate AlGaN/GaN MODFET on Sapphire Grown by MOCVD .....	428
[14]	Recessed Gate AlGaN/GaN Modulation-Doped Field-Effect Transistors on Sapphire .....	432
[15]	サファイア基板上的AlGaN/GaN MODFETの諸特性 .....	435
[16]	リセスゲートを用いたサファイア基板上的AlGaN/GaN MODFETの諸特性 .....	437
[17]	Heteroepitaxial Growth of III-V Compound Semiconductors for Optoelectronic Devices .....	443
[18]	電子デバイスと応用 (高温高周波高出力化) .....	449
[Carbon]		
[1]	Raman Spectra of Ion Beam Sputtered Amorphous Carbon Thin Films Deposited from Camphoric Carbon .....	465
[2]	Properties of Carbon Thin Films Deposited by Plasma-CVD for Solar Cell Application .....	471
[3]	Solar Cells Based on Carbon Thin Films .....	473
[4]	Carbon - A Novel Electronic Material for Light Energy Conversions .....	476
[5]	Phosphorus Doped Camphoric Carbon Deposited by Pulsed Laser Ablation and Its Application to C/Si Junction Solar Cell .....	479
[6]	高周波プラズマCVD法による太陽電池用カーボン薄膜の堆積 .....	482
[7]	樟脳を原料として作製したアモルファスカーボンと太陽電池への応用 .....	490
[8]	Amorphous Carbon Thin Films for Optoelectronic Device Application .....	496
[9]	Carbon in Light Energy Conversion Device: Opto-Electrical Properties .....	509
[10]	Carbon - An Electronic Material: Properties and Applications .....	512

[TiO<sub>2</sub>]

[1]	Investigation of the Effect of Sol Processing Parameters on the Photoelectrical Properties of Dye-Sensitized TiO <sub>2</sub> Solar Cells .....	525
[2]	Dye-Sensitized Nano-Crystalline TiO <sub>2</sub> Solar Cell by Sol-Gel Spin-Coating Method .....	528

[制御]

[1]	Design of Discrete-Time Repetitive Control System for Pole Placement and Application .....	530
[2]	Generalized Optimal Zero Phase Error Tracking Controller Design .....	539
[3]	サンプル値系の有限時間整定制御 .....	545
[4]	不確かさの影響を最小化する多入力多出力デッドビート制御系 .....	551