

Christos Thomidis

1677 Beacon st, Brookline 02445, MA, USA

Cell: 617-990-6814 cthomidi@bu.edu

7 Gregoriou E' Street, Thessaloniki 54248, Greece

Tel: +30 2310 319946 cthom@skiathos.physics.auth.gr

EDUCATION

Aristotle University of Thessaloniki, Thessaloniki (2000-2002)

- M.S in Physics of Materials, October 2003
- Thesis title: “Comparative study of transport optical and recombination properties of GaN films produced by MBE, MOCVD and HVPE methods – Fabrication and characterization of UV-LEDs” (Boston University, 2002-2003)
- Advisor: Professor Theodore D. Moustakas

Aristotle University of Thessaloniki, Thessaloniki (1991-1998)

- B.S in Physics, March 1998

RESEARCH EXPERIENCE

- Optical and electro-optical characterization of bulk films and quantum wells, including photoluminescence, transmission, reflectivity, stimulated emission, photocurrent, time dependent photocurrent and electroreflectance measurements in the whole range from cryogenic to above room temperature. FTIR spectroscopy: investigation of vibrational modes, free carrier absorption, KKR analysis etc.
- Structural characterization of films by x-ray diffraction (XRD) for determination of thin film quality, growth rates and alloy composition including theta-two theta scans, on and off axis rocking curves and reciprocal space mapping.

- Electrical characterization of films, including carrier concentrations, mobility and film resistivity by Hall-Effect measurements.
- Development of fabrication and packaging processes for III-Nitride based devices, including mask design using CAD tools for photolithography, inductively coupled plasma (ICP)-based dry etching recipes for III-Nitride materials, metal contact schemes for III-Nitride based devices and device hybridization via flip-chip bonding.
- Fabrication of III-Nitride based devices (LEDs and transistors) including photolithography (positive tone and image reversal processing using different photoresist chemistries), inductively coupled plasma (ICP)-based dry etching, and electron-beam evaporation of metal contacts.
- Packaging of fully processed devices, including wafer dicing, wire (ball) bonding, flip-chip bonding (using a Suss Microtech FC150 flip-chip bonder employing In bumps) and hybridization.
- Electrical and optical characterization of packaged devices, including current-voltage characteristics, electroluminescence and optical output power measurements.
- Computer interfacing and automation of various laboratory equipment using computer boards and LabVIEW program.
- Operation of various other research tools and equipment, including sputtering and reactive-ion etching (RIE) systems, rapid thermal annealer (RTA), plasma asher, profiler and mask aligners.

PROFESSIONAL EXPERIENCE

Boston University, Boston, MA (August 2006 -)

Research Associate, Wide Bandgap Semiconductors Laboratory, Boston University Photonics Center

Boston University, Boston, MA (February 2002-December 2004)

Research Assistant, Wide Bandgap Semiconductors Laboratory, Boston University Photonics Center

- Performed fabrication, packaging, and characterization of UV LEDs.
- Provided support to all LED projects in the group.
- Performed optical, electro-optical and structural characterization of bulk films and quantum wells
- Trained graduate students.

Papanas Private Schools, Thessaloniki (2000-2001, 1995-1997)

Teaching Associate

- Taught physics in all high school levels

PUBLICATIONS

1. *Ultraviolet light emitting diodes using non-polar a-plane AlGaN multiple quantum wells*, R. Chandrasekaran, A. Bhattacharyya, R. France, C. Thomidis, A. Williams and T. D. Moustakas (Accepted for publication in the Fall MRS 2006 proceedings).

2. *Blue-Green-Red LEDs based on InGaN Quantum Dots (QDs) Grown by Plasma-assisted Molecular Beam Epitaxy*, Tao Xu, A. Yu Nikiforov, Ryan France, Christos Thomidis, Adrian Williams, T. D. Moustakas (Accepted for publication in the IWN 2006 proceedings).

3. J.S. Cabalu, A. Bhattacharyya, C. Thomidis, I. Friel, T. D. Moustakas, C. J. Collins, and Ph. Komninou, “*High power ultraviolet light emitting diodes based on GaN/AlGaN quantum wells produced by molecular beam epitaxy*”, J. Appl. Phys. **100, 104506 (2006)**

4. J. S. Cabalu, C. Thomidis, T. D. Moustakas, S. Riyopoulos, Lin Zhou, and David J. Smith, “*Enhanced internal quantum efficiency and light extraction efficiency from textured GaN/AlGaN quantum wells grown by molecular beam epitaxy*”, J. Appl. Phys. **99, 064904 (2006)**

5. Tai-Chu P. Chen, C. Thomidis, J. Abell, W. Li and T. D. Moustakas, “*Growth of InN Films by RF plasma –assisted MBE and Cluster Beam Epitaxy*”, Journal of Crystal Growth **Vol 288, Issue 2, 1 March 2006, 254-260**

6. I. Friel, C. Thomidis and T.D Moustakas, “*Ultraviolet electroabsorption modulator based on AlGaN/GaN multiple quantum wells*”, J. Appl. Phys. **97, 123515 (2005)**

7. J.S. Cabalu C. Thomidis, I. Friel and T.D. Moustakas, “*Nitrides LEDs based on Flat and “Wrinkled” Quantum Wells*”, *Quantum Sensing and Nanophotonic Devices*, Proc. of SPIE **Volume 5732, 185-196, March 2005 (INVITED PAPER)**

8. T. Xu, C. Thomidis, I. Friel, T. D. Moustakas, “*Growth and silicon doping of AlGaN films in the entire alloy composition by molecular beam epitaxy*”, Phys. Stat. Sol. (c) **2, No. 7, 2220-2223 (2005)**

9. I. Friel, C. Thomidis and T.D Moustakas, “*Well width dependence of disorder effects and luminescence quenching in AlGaN/GaN quantum wells*”, Appl. Phys. Let. **85**, 3068 (2004)
10. I. Friel, C. Thomidis, Y. Fedyunin and T.D Moustakas, “*Investigation of excitons in AlGaN/GaN MQWs by lateral photocurrent and photoluminescence spectroscopies*”, J. Appl. Phys. **95**, 3495 (2004)
11. Jasper S. Cabalu, C. Thomidis, Theodore D. Moustakas and Spilios Riyopoulos, “*Enhanced light extraction and spontaneous emission from textured GaN templates formed during growth by the HVPE method*”, ECS proceedings Volume **2004-6**, 351, (Hawaii 2004)
12. T. Xu, Adrian Williams, Christos Thomidis and Theodore Moustakas, Lin Zhou and David J. Smith, “*GaN Quantum Dots Grown at High Temperatures by Molecular Beam Epitaxy*” MRS proceedings 2004 **E2.4 Volume 831**
13. W.F Stacey, P. Lamarre, J. Murguia, V. Tassev, C. Thomidis, W. Li, A. Bhattacharyya, T. Xu, I. Friel, J. Cabalu, T.D. Moustakas, J. Lorenzo, D. Bliss, Q. Sun-Paduan and D. Weyburne, “*GaN Devices for High-Efficiency, High Power X-band Radar Performance Enhancement Grown on High Thermal Conductivity AlN Substrates*”, 2nd International Energy Conversion Engineering Conference Proceedings AIAA **2004-5751**

PRESENTATIONS

High Power UV-LEDs Grown by Molecular Beam Epitaxy, J. S. Cabalu, C. Thomidis, A. Bhattacharyya, C. Collins, and T. D. Moustakas, Oral presentation, 23rd North American Molecular Beam Epitaxy Conference, Santa Barbara, CA, USA (September 2005).

Nitride LEDs Based on Flat and “Wrinkled” Quantum Wells (INVITED TALK), J. S. Cabalu, C. Thomidis, I. Friel, T. D. Moustakas, Quantum Sensing and Nanophotonic Devices, SPIE International Conference, San Jose, California, USA (January 2005).

Development of UV-LEDs Based on III-Nitride MQWS Grown Along Non-Polar [11-20] Direction Ramya Chandrasekaran, Anirban Battacharyya, Adrian Williams, Jasper Cabalu, Christos Thomidis, Theodore D. Moustakas, Lin Zhou and David J. Smith.
Fall MRS 2005 (Oral presentation)

Growth and characterization of Self Organized quantum dots on miscut (0001) Sapphire substrates by Molecular Beam Epitaxy T. Xu, A. Williams, C. Thomidis, T.D. Moustakas, L. Zhou and D J Smith.

Fall MRS 2004 (Oral presentation)

Growth of InN films by Cluster Beam Epitaxy and RF Plasma assisted MBE Tai Chou P Chen, C. Thomidis, J. Abell, A. Bhattacharya and T.D. Moustakas.

Fall MRS 2004 (Oral presentation)

High power 340 nm UV-LEDs grown by plasma assisted molecular beam epitaxy(PAMBE)

J. S. Cabalu, C. Thomidis, A. Bhattacharya, T.D. Moustakas and C. Collins.

Fall MRS 2004 (Oral presentation)

Growth and physics of GaN-Based wrinkled quantum wells by MBE J.S. Cabalu, C. Thomidis, T.D. Moustakas and S. Riyopoulos

Fall MRS 2004

Enhanced Light Extraction and Spontaneous Emission from “Wrinkled” Quantum Wells Grown by Plasma Assisted Molecular Beam Epitaxy, J. S. Cabalu, C. Thomidis, I.

Friel, and T. D. Moustakas, Oral Presentation, 22nd North American Molecular Beam Epitaxy Conference, (Alberta, Canada ,October 2004 Oral presentation).

GaN Devices for High-Efficiency High Power X-Band Radar Performance, W. Stacey and P. Lamarre, J. Murguia and V. Tassev, T. Moustakas and C. Thomidis

2nd International Energy Conversion Engineering Conference, (Providence, Rhode Island, 2004, Oral presentation)

Fall MRS 2004 (Oral presentation)

Enhanced light extraction and spontaneous emission from textured GaN templates formed during growth by the HVPE method, J. S. Cabalu, C. Thomidis, T.D. Moustakas

and S. Riyopoulos

(ECS-Hawaii 2004, Oral presentation)

Growth and characterization of UV electroabsorption modulators based on AlGaIn/GaN quantum wells, I. Friel, C. Thomidis, T.D. Moustakas.

International MBE conference 2004 (Edinburgh)

Well width dependence of disorder effects on the optical properties of AlGaIn/GaN quantum wells, I. Friel , C. Thomidis, T.D. Moustakas.

International MBE conference 2004 (Edinburgh, Oral presentation))

Growth and Silicon Doping of AlGa_N Films in the Entire Alloy Composition by Molecular Beam Epitaxy, T. Xu, C. Thomidis, I. Friel and T.D. Moustakas
9th Wide-Bandgap III Nitride Workshop 2004, (Pittsburg, Oral presentation))

Lateral Photocurrent spectroscopy investigation of excitonic absorption in AlGa_N/Ga_N multiple quantum wells grown by molecular beam epitaxy, C. Thomidis, I. Friel, Y. Fedyunin, T. D. Moustakas
North American MBE conference 2003, (Oral presentation)
19th Panhellenic conference of solid state physics and material science, (Oral presentation)
8th Wide-Bandgap III-Nitride Workshop, (Oral presentation))

Investigation of excitons in AlGa_N/Ga_N MQWs by lateral photocurrent and photoluminescence spectroscopies I. Friel, C. Thomidis, Y. Fedyunin and T.D Moustakas
Fall MRS 2003 (Oral presentation)

Efficient p-type doping of Ga_N films by MBE, A. Bhattacharyya, W. Li, C. Thomidis, T.D. Moustakas
Fall MRS 2003,(Oral presentation)
North American MBE conference 2003, (Oral presentation)
8th Wide-Bandgap III-Nitride Workshop

Evidence of band tails in Ga_N Films produced by MOCVD, MBE and HVPE, C. Thomidis, A. Bhattacharyya, K. Nishino, Y. Fedyunin, T.D Moustakas
19th Panhellenic conference of solid state physics and material science

Ga_N/AlGa_N MQWs UV LEDs grown by MBE, C. Thomidis A. Bhattacharyya, J. Cabalu, Y. Fedyunin, T.D Moustakas
19th Panhellenic conference of solid state physics and material science
8th Wide-Bandgap III-Nitride Workshop
North American MBE conference 2003

Optical gap of free standing In_N films, C. Thomidis, T-C Chen, J. Abell, W. Li, A. Bhattacharyya, T.D Moustakas
8th Wide-Bandgap III-Nitride Workshop,
North American MBE conference 2003

Optical and recombination properties of Ga_N films grown by MOCVD and MBE, C. Thomidis, A. Bhattacharyya, K. Nishino, T.D Moustakas
Fall MRS 2002