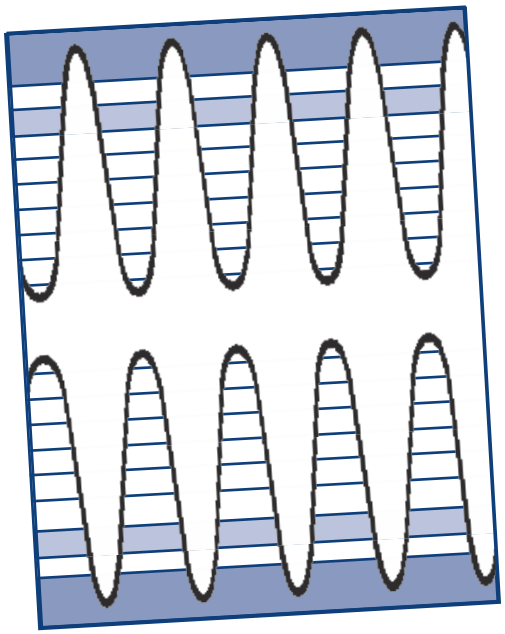
45th

2003 TMS ELECTRONIC MATERIALS CONFERENCE & EXHIBITION

University of Utah
Salt Lake City, UT

June 25-27, 2003



TMS

ADVANCE PROGRAM

Includes Housing and Registration Forms

Sponsored by:
The Electronic, Magnetic & Photonic Materials Division of TMS

http://www.tms.org/EMC.html

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EMC Registration and Housing forms are included in the center of this brochure.

Early Housing and Registration are Advised.

GENERAL INFORMATION

DATE AND LOCATION

The 45th Annual Conference of the EMPMD Electronic Materials Committee of TMS (The Minerals, Metals & Materials Society) will be held at the University of Utah, Salt Lake City, June 25-27, 2003. This conference is being coordinated with the Device Research Conference of IEEE, which will take place June 23-25, 2003, at the same location.

INTENDED AUDIENCE

The 45th TMS Electronic Materials Conference (EMC) provides a forum for topics of current interest and significance in the area of preparation and characterization of electronic materials. Individuals actively engaged or interested in electronic materials research and development are encouraged to attend this meeting. Attendees include students, professors, scientists, engineers, researchers, technicians, R&D managers, and product managers.

TECHNICAL PROGRAM INFORMATION

For technical program information regarding the 2003 TMS Electronic Materials Conference, please contact:

General Chair
Ilesanmi Adesida
University of Illinois
Micro & Nanotechnology Lab
208 N. Wright St.
Urbana, IL 61801
Tel: (217) 244-6379
Fax: (217) 244-6375
E-mail: adesida@capone.micro.uiuc.edu

Program Chair
April Brown
Duke University
Box 90291
Durham, NC 27708
Tel: (919) 660-5442
Fax: (919) 660-5293
E-mail: brown@ee.duke.edu

GENERAL INFORMATION

CONFERENCE REGISTRATION

All attendees are encouraged to register in advance to avoid delays in registering at the Conference. Both Electronic Materials Conference (EMC) and Device Research Conference (DRC) badges will be accepted by both conferences on Wednesday, June 25. Advance registration fees are as follows: full conference $350; one day $300; student $150.

Registration fee includes welcoming reception, coffee breaks, Thursday banquet, attendance to all technical sessions, and exhibition. One-day fee does not include the Thursday banquet.

To register in advance, register via TMS OnLine at *www.tms.org/EMC.html* or complete the registration form provided in this mailer. **Advance registrations will be accepted until June 2, 2003.** For questions concerning registration, please contact TMS Meeting Services at Telephone: (724) 776-9000 ext. 243; Fax: (724) 776-3770; or E-mail: mtgserv@tms.org.

You may register at the conference. Please note: On-site registration fees will be higher. On-site registration will be located in the Olpin Union Building and begin on Tuesday afternoon continuing through Friday morning during the following hours:

Tuesday, June 24 ..... 3:00 PM–5:00 PM
Wednesday, June 25 .....7:30 AM–5:00 PM
Thursday, June 26 .....7:30 AM–4:00 PM
Friday, June 27 ..... 7:30 AM–10:00 AM

REFUND POLICY

A written request must be sent to TMS Headquarters, 184 Thorn Hill Road, Warrendale, PA 15086 and postmarked no later than June 2, 2003. A $50 processing fee will be charged on all cancellations. NO refunds will be issued after the deadline date.

MESSAGES

A message board will be located near the Registration Desk in the Olpin Union Building. Messages will be posted in this area throughout the conference.

CAMPUS SMOKING POLICY

University of Utah prohibits smoking in its buildings. Smoking will be allowed only in outdoor areas.

LATE NEWS PAPERS

Late News Papers will be considered. Authors must submit the abstract by June 2, 2003, to the Program Chair. Authors of accepted papers will be notified before the EMC Conference.

GENERAL INFORMATION

TECHNICAL SESSIONS

The Electronic Materials technical program will commence at 8:30 AM on Wednesday, June 25. Sessions will be held on grounds at the University of Utah at the Olpin Union Building as well as the Francis Armstrong Madsen Building.

Session and paper titles are included in this brochure.

AMERICANS WITH DISABILITIES ACT

TMS strongly supports the federal Americans with Disabilities Act (ADA), which prohibits discrimination against, and promotes public accessibility for those with disabilities. In support of and compliance with this Act, we ask that those registered attendees requiring specific equipment or services, indicate your needs on the enclosed housing and registration forms.

POLICY ON AUDIO AND VISUAL RECORDING OF TECHNICAL PAPER PRESENTATIONS/SESSIONS

TMS reserves the rights to any audio and video reproduction of all presentations at every TMS sponsored meeting. Recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright without the express written consent of TMS and the individual authors is strictly prohibited.

PROGRAM

A complete program with abstracts of papers to be presented at the meeting will be made available for all registrants at the registration desk when picking up your registration packet.

STUDENT TRAVEL ASSISTANCE

Student authors who plan to present a paper at the 2003 Electronic Materials Conference may be eligible for travel assistance depending on the particular circumstances involved. To apply for student travel assistance, submit an application no later than June 6, 2003 to:

Ilesanmi Adesida, *General Chair*
University of Illinois
Micro & Nanotechnology Lab
208 N. Wright St.
Urbana, IL 61801
Telephone: (217) 244-6379
Fax: (217) 244-6375
E-mail: adesida@capone.micro.uiuc.edu

Student travel assistance is made possible through generous donations from the Electronic, Magnetic & Photonic Materials Division (EMPMD) of TMS and the EMC Foundation.

GENERAL INFORMATION

STUDENT AWARDS

Four $500 student awards are given annually by the Electronic Materials Committee for the best presentations by students at the conference. Student papers will be judged on both scientific content and presentation at the Electronic Materials Conference.

Awards will be presented during the plenary session on Wednesday, June 25, in the Olpin Union Ballroom.

COMPUTER/NETWORK FACILITIES

Registrants will have the opportunity to access the Union Computer Lab on the 1st floor of the Olpin Union Building. The hours of operation are 9:00 am to 5:00 pm Monday through Thursday, and 10:00 am to 5 pm., Fridays and Saturdays. This is a student computer lab and students do take first precedent on access. There is an additional computer lab in the Marriott Library, which is only a 5-minute walk from the Union Bldg.

RECREATION

The HPER recreational facility is open daily, Monday through Sunday. Hours will be posted at the Service Desk for your convenience. The cost is $4.00 for adults and children. Equipment includes racquetball courts, weight training rooms, gym, and 3 swimming pools.

ABOUT SALT LAKE CITY

You've picked a great year to visit. Friendly, accessible, sophisticated Salt Lake delivers a metropolitan experience with a mountain twist.

Salt Lake is in the midst of an Olympic-fueled renaissance. Visit this year and you'll find a rejuvenated community with new shopping districts and specialty stores, top-notch lodging for any budget, and world-class attractions, including Historic Temple Square's renowned lights, the worlds largest dinosaur museum, and monthly gallery strolls to Salt Lake's best art shops. Every year, thousands flock from all over the globe to the nationally acclaimed symphony, opera, theater, and dance performances. All enjoy Salt Lake's vibrant nightlife, with scores of award-winning clubs, brewpubs, and restaurants.

DRESS

Casual clothing is in order with a sweater or light jacket occasionally needed for the evenings. The University of Utah is essentially a walking campus, so be sure to wear comfortable walking shoes.

SOCIAL ACTIVITIES

WELCOMING RECEPTION

All attendees are invited to attend a hosted Welcoming Reception on Wednesday, June 25 from 7:00 PM-9:00 PM in the Olpin Union Ballroom.

EVENING AT HERITAGE PARK

On Thursday, June 26, conference attendees and their guests will have the opportunity to enjoy a catered dinner at Heritage Park. **The cost of this event is included in the full conference and student registration fees. It is not included in the one-day registration fee.**

The cost for one-day registrants and guests is $60 for adults and $25 for children 12 and under. You may order tickets for this event on the registration form. You are encouraged to purchase your tickets in advance. Tickets will be available at the registration desk at the conference. Deadline for ticket sales will be 5:00 PM on Wednesday, June 25, 2003.

INFORMAL COFFEE BREAKS

During the intermission of morning and afternoon sessions (at approximately 10:00-10:40 AM and 3:00-3:40 PM) coffee, tea, and sodas will be served in the Olpin Union Ballroom Corridor.

EXHIBITION & SPONSORSHIP

EXHIBITION

The 2003 EMC will feature an exhibition of electronic materials products, technology, and services. Exhibitors are invited to display equipment, instrumentation, software, publications and services relating to electronic materials industry and research.

EMC attendees visit the Exhibition to learn about the latest technologies, products, and processes, to meet the industry's leading suppliers, to review process and production challenges, and to find practical solutions.

Exhibitor Products and Services at a Glance

- Advanced RTP process solutions
- Advanced thin-film characterization products
- Chemical Vapor Deposition (CVD)
- Compound semiconductor materials
- Contamination identification
- Cryogenic equipment: Temperature controlled systems–cryogenic cooling systems
- Failure analysis
- GaAs and III-V integrated circuits

EXHIBITION & SPONSORSHIP

- GaAs and InP based epitaxial wafers; substrates
- Gas purifiers for silicon and GaAs applications; Specialty gases, gas handling equipment
- High performance purification systems
- High purity metalorganics
- III-V materials
- in-situ temperature and thickness
- LEDs, laser diodes and III-V components
- Materials characterization
- MBE products and services; effusion cells; Nitride Systems
- Metal alkyls
- Metalorganic Chemical Vapor Deposition (MOCVD) systems
- Optoelectronics systems
- Wafer processing equipment: Polishing and reclaiming: SiC & related materials
- Process control solutions
- R&D systems and production systems
- Sapphire substrates for GaN and compound semiconductor epitaxy
- Scanning Probe & Electron Microscopes & accessories
- Silicon heterostructures
- Ultra High Purity (UHP) metals, gas, and chemical delivery systems
- Wide bandgap semiconductors

The conference schedule is set up to encourage attendees to visit the exhibition, with features such as:

- The welcoming reception in the exhibit area the opening day of the show
- Coffee breaks held in the exhibit area
- Exhibits conveniently located adjacent to the technical session rooms
- Exhibition hours which complement the technical program schedule

Exhibition Dates and Times:

Wednesday, June 25, 2003
9:15 AM–4:00 PM and 7:00–9:00 PM

Thursday, June 26, 2003
9:00 AM–4:00 PM

The Exhibition fee of $1,100 includes:

- 10'x10' Exhibition space with back and side drape
- One-six foot draped table
- Two-chairs
- Standard electrical service

EXHIBITION & SPONSORSHIP

- Complimentary listing in the show directory— *Distributed to all meeting registrants*
- One registration to the full conference and exhibits
- One ticket to the EMC Banquet on Thursday
- Post-show report of meeting participants
- Exhibition management services

Make plans now to join over 500 key prospects for the EMC 2003 event. To reserve space for the Exhibition, complete and return the enclosed Exhibition Space Reservation Form, contact TMS today, or visit:

http://www.tms.org/EMC.html

CORPORATE SPONSORSHIP OPPORTUNITIES:

As exclusive sponsor of one of the following areas at the Electronic Materials Conference, you will showcase your company name and logo to ALL conference and exhibit attendees! Deliver your message directly to the attendees with:

- Signage throughout the conference areas
- TMS website recognition and hypertext link
- Conference program acknowledgement with your company name and logo

PROPOSED SPONSOR ACTIVITIES include the Welcoming Reception, Coffee breaks, Continental breakfast, and Cyber Center.

For more information on the exhibition and corporate sponsor opportunities, contact:

Cindy A. Wilson
Exhibits Coordinator
TMS, 184 Thorn Hill Road
Warrendale, PA 15086

Phone: (724) 776-9000, x 231
Fax: (724) 776-3770
E-mail: wilson@tms.org

ON-CAMPUS HOUSING

ON-CAMPUS HOUSING ACCOMMODATIONS

We are pleased to invite EMC attendees to reside on the University of Utah campus. On-campus accommodations will be available on a first request basis; therefore, early registrations and reservations are essential. **On-site housing reservations will not be accommodated at the university.**

Residence halls and dining facilities are located within a 15-minute walk from the session meeting rooms. Residence Hall accommodations are either single or double occupancy, with 2–4 people sharing a bathroom. **There are no rooms with private restrooms.** There is no daily maid service or television. Each person will be provided with 2 sheets, a blanket, a pillow, a pillow case, a towel, soap, and a drinking cup. Telephones are for local calls only; a calling card is required for long distance. Check in is after 2:00 PM; Check out is before 10:00 AM. Unfortunately, there is no housing on campus for those with children. We recommend The Marriott University Park Hotel if you will be traveling with children. Please check the hotel listing in the Off-Campus Housing section of this brochure.

The University of Utah offers the following package plans to provide flexibility and the option to attend both DRC and EMC. All residence hall package plans include full meal service. Residence hall rooms without meals are not available. No adjustments for lodging or meals will be made for late arrival or early departure from the chosen package.

Please indicate your plan preference on the enclosed reservation form and return it with your payment to:
Meghan Webb
Registration Coordinator
University Conference Services
University of Utah
110 South Fort Douglas Blvd
Salt Lake City, UT 84113
Telephone: (801) 587-2980
Fax: (801) 587-1002
E-mail: conferences@guesthouse.utah.edu

Reservations received by May 31, 2003, will be sent a confirmation by the University Conference Services. Prepayment for the anticipated number of nights is required.

Meals will be served in the Heritage Center during the following hours:

Breakfast	6:30 AM–9:00 AM
Lunch	11:00 AM–2:00 PM
Dinner	4:30 PM–7:30 PM

ON-CAMPUS HOUSING

Plan C:

(for those planning to attend DRC and EMC) Includes lodging Sunday through Thursday night and the following 12 meals:

Sunday	dinner
Monday	breakfast and lunch (no Heritage Center meal offered Monday night due to the DRC Poster Session Reception)
Tuesday	breakfast and lunch (no Heritage Center meal offered Tuesday night due to the DRC Banquet)
Wednesday	breakfast, lunch and dinner
Thursday	breakfast and lunch (no Heritage Center meal offered Thursday night due to the EMC Banquet)
Friday	breakfast and lunch

NOTE: This package includes dinner on your arrival day.

Single Occupancy	$245.00 per person
Double Occupancy	$212.00 per person

Plan D:

Includes lodging Tuesday through Thursday nights and the following 8 meals:

Tuesday	dinner
Wednesday	breakfast, lunch and dinner
Thursday	breakfast and lunch (no Heritage Center meal offered Thursday night due to the EMC Banquet)
Friday	breakfast and lunch

NOTE: this package includes dinner on your arrival day.

Single Occupancy	$155.00 per person
Double Occupancy	$135.00 per person

Plan E:

Includes lodging Wednesday and Thursday nights and the following 6 meals:

Wednesday	lunch and dinner
Thursday	breakfast and lunch (no Heritage Center meal offered Thursday night due to the EMC Banquet)
Friday	breakfast and lunch

Single Occupancy	$110.00 per person
Double Occupancy	$99.00 per person

ON-CAMPUS HOUSING

EARLY ARRIVAL PACKAGE:

Saturday Night (June 21) Room Rate:
(includes lodging Saturday night and the following meals)

Saturday ..... Dinner
Sunday..... Breakfast

Single Occupancy .....$47.00 per person
Double Occupancy.....$40.00 per person

LATE DEPARTURE:

Friday Night (June 27) Room Rate:
(includes lodging Friday evening and the following meals)

Friday .....Dinner

(Breakfast & lunch included in main packages)

Saturday .....Breakfast

NOTE: Checkout is Saturday, 10:00 AM

Single Occupancy ..... $47.00 per person
Double Occupancy..... $40.00 per person

COMMUTER LUNCH PACKAGE:

Attendees that plan to make off-campus housing arrangements directly with the hotel/motel and wish to purchase a commuter lunch package for on-campus meals, the following packages are available through the University of Utah.

Three (3) EMC lunches.....$23.50
Five (5) DRC/EMC lunches.....$34.50

NOTE: It is important to apply early on the Housing Reservation Form.

NO REFUNDS WILL BE MADE FOR LATE ARRIVALS, EARLY DEPARTURES, OR MISSED MEALS

METHOD OF PAYMENT:

Payment in U.S. dollars may be made by:

- Personal check or money order. Checks must be drawn on a U.S. bank and made payable to University Conference Services
- Credit Card: American Express, Visa or MasterCard

If you have questions regarding on-campus registration and accommodations, please contact:

Meghan Webb
Registration Coordinator
University Conference Services
University of Utah
110 South Fort Douglas Blvd
Salt Lake City, UT 84113
Telephone: (801) 587-2980
Fax: (801) 587-1002
E-mail: conferences@guesthouse.utah.edu

OFF-CAMPUS HOUSING

OFF-CAMPUS HOUSING ACCOMMODATIONS

A block of rooms have been reserved at special conference rates for the hotel listed below. Rooms will be released as early as Saturday, May 31. Thereafter, reservations can be obtained only on a space available request. Please contact the hotel directly by mail, phone, or fax as soon as possible. Rooms are available for DRC, EMC or both, Sunday through Thursday nights, and **you must identify yourself as either an EMC or DRC attendee.** You can also stay Friday or Saturday night if you request it at the time of making your reservations. **Please note that the following rate DOES NOT include tax.**

Marriott University Park
480 Wakara Way
Salt Lake City, UT 84108
USA
Telephone: (801) 581-1000
Fax: (801) 584-3321
Toll Free: 800-637-4390

$119.00 per night (excluding tax)

With spectacular views of Salt Lake City and the Wasatch Mountains, the Marriott University Park provides a retreat-like setting for you. Located adjacent to the University of Utah in high-tech Research Park, the University Park Marriott has what it takes to make your trip successful. Enjoy the comfort of one of our 218 guest rooms, each equipped with remote-control TV, high-speed internet service and in-room coffee. Our restaurant, lounge, indoor pool, whirlpool and fitness room will add to the pleasure of your stay. Ski Utah's famous powder at one of seven world-class ski resorts or take in nearby museums, shopping, sightseeing and nightlife. Let the Marriott University Park make your visit to Salt Lake City a memorable one.

Check-in: 4:00 PM; Check-out: 12:00 PM.
Complimentary parking.
Free shuttle from airport, available 6 AM till 10 PM. Use courtesy phone in baggage claim area of airport to make arrangements.

TRANSPORTATION

The Salt Lake City area may be reached by:

CAR

From the Salt Lake International Airport: Take I-80 East approximately 1.5 miles to the North Temple exit. Follow North Temple approximately 3 miles to State Street (one block beyond the Mormon Temple). Turn right on State Street, and go south 5 blocks to 400 South. Turn left, proceeding east on 400 South for approximately 1.5 miles until you reach the University of Utah campus.

From I-15 northbound: Take the eastbound 600 South exit. At State Street turn left, proceeding 2 blocks north until you reach 400 South. Turn right, proceeding east on 400 South for approximately 2 miles until you reach the University of Utah campus.

From I-15 southbound: Take the eastbound 600 South exit. At 300 West turn left, proceeding approximately 2 blocks north until you reach 400 South. Turn right, proceeding east on 400 South for approximately 2-3 miles until you reach the University of Utah campus.

AIR

Salt Lake City is a major hub of Delta airlines, and is serviced by over 600 daily flights from most major US cities and by many airlines, including United, American, Continental, Southwest, and Northwest. Salt Lake City International Airport is located five miles northwest of downtown Salt Lake City.

As airline security is constantly changing, please be sure to check your airline and airport for rules regarding luggage regulations, check-in times, etc. Go to www.tsa.dot.gov for a list of what can and cannot be carried aboard a plane.

EXPRESS SHUTTLE

Call at least one day in advance for reservations, 1-800-397-0773 (US, Canada, Mexico) or e-mail reservations@expressshuttleutah.com. The University of Utah has a special rate of $13.00 one way. Indicate that you are traveling to the University of Utah and whether or not you will be traveling in a group. Check in with the shuttle service when you arrive at the airport. Reservations for your return trip can also be made in advance. Plan to depart for the airport 2-3 hours prior to your flight.

TAXI

Service is available from the Airport to the local hotels not offering free shuttle service. Taxis are available at the airport for approximately $20 one way. Taxis depart from the taxis stands on the ground floor outside the baggage collection area at each terminal. Travel time from the airport to the University is approximately 20 minutes.

TRANSPORTATION

PUBLIC TRANSPORTATION

Runs between the Salt Lake City Airport, downtown Salt Lake City, and the University of Utah. On campus, the University provides an extensive shuttle service. Daily shuttles are in service from 6:00 AM through 7:00 PM. There is shuttle service on weekends and University holidays.

PARKING

Visitors to the University's main campus have three parking options. They may park in pay lots, at meters, or purchase a day/temporary pass.

Pay Lots

There are five pay lots. They are located between the University Bookstore and Marriott Library, adjacent to the Student Services Building, across the street from the Olpin Union, west of the medical bookstore, and in the Business Loop east of the Fine Arts Museum. All pay lots open approximately 7 a.m. Monday through Friday, but close at different times.

The rate schedule for all lots is $1 per hour with a Maximum charge of $8 per exit. Payment can be made using cash, a personal check, credit card, or by validation.

After Hours Envelopes (AHE) are placed on vehicles, which arrived in the pay lot during operating hours but remained in the lot after it closed. If not paid within 10 calendar days, a $10 parking citation is automatically issued. After-hours fees can be paid by depositing the envelope in the yellow box located near the exit of each lot, by bringing to Commuter Services, or by mailing either via campus mail or the USPS. For accountability purposes, we prohibit our booth attendants from accepting After Hours Envelopes. Customers should deposit or mail the envelopes themselves.

Parking Meters

Located in most lots on campus. They allow parking from 36 minutes to 2 hours, depending on location. The time each meter allows is printed on the meter head just below the time window and immediately above the rate schedule. The LED readout displays the time purchased and will not add time when the limit is reached. Meters can take nickels, dimes, and quarters but will not accept foreign coins.

Day/Temporary Passes

If you're visiting the university for one, two, or consecutive days, a day or temporary pass may be your best option. It can be purchased on the day you wish to use it or bought in advance. It allows a visitor to park on campus for specified days in specified lots. The cost per day depends on where you wish to park. It is not valid at meters or in pay lots. Passes are available at Commuter Services or at pay lot booths. A day pass must display the date of the day it is being used in order to be valid. For further assistance, please call the Commuter Services Office at (801) 581-6415; open weekdays 7:30 AM-5:00 PM. They can also be reached via e-mail comments@parking.utah.edu or fax (801) 581-4056.

ORGANIZING COMMITTEES

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ORGANIZING COMMITTEES

INVITED ORGANIZERS FOR THE 2003 EMC CONFERENCE:

The Electronic Materials Conference wishes to thank the following invited organizers for their support and contribution to the technical program presented at this year's conference:

Charles Ahn
Yale University

Andrew Allerman
Sandia National Laboratories

Supriyo Bandyopadhayay
Virginia Commonwealth University

Brian Bennett
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Glenn Solomon
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Robert Stahlbush
Naval Research Laboratory

Susanne Stemmer
University of California

Ray Tsui
Motorola Labs

Jenna Zinck
HRL Laboratories, LLC

PUBLICATON INFORMATION

The Electronic Materials Conference publishes no formal conference proceedings, but conference abstracts will be published in the *Journal of Electronic Materials (JEM). JEM* encourages both presenters and attendees to submit manuscripts on their work.

JEM, a monthly archival publication of TMS and the Institute of Electrical and Electronics Engineers (IEEE), was created to serve as the publication of the Electronic Materials Conference. Throughout the year, *JEM* publishes selected papers presented at the Electronic Materials Conference and welcomes the submission of related electronic materials articles.

The journal contains technical papers detailing critical new developments in the electronics field, as well as invited and contributed review papers on topics of current interest, designed to enable those in the field of electronics to keep abreast of activities in areas vital to their own technical interests.

Articles that appear in *JEM* are reviewed, selected, and edited by peers in the field who serve as voluntary members of the editorial board, the board of associate editors, or section editors. Generally, they are members of the Electronic Materials Committee of TMS or are members of IEEE.

The full-conference member $382, USA Nonmember $542, and Non-USA Nonmember $562 registration fees include a 2004 subscription to *JEM*, which will include manuscripts of papers presented at the 2003 Electronic Materials Conference. Those who register for one day may order a 2004 subscription to *JEM* on the registration form.

Manuscript Submission

General manuscripts should be sent to Theodore C. Harman, editor of *JEM*, at the following address:

Theodore C. Harman
Lincoln Laboratory
Massachusetts Institute of Technology
244 Wood Street
Lexington, MA 02420-9108
Telephone: 781-981-4418
Fax: 781-981-0122
E-mail: tharman@11.mit.edu

Detailed manuscript submission guidelines are available from the *JEM* web site at http://www.tms.org/jem.html.

SUBSCRIPTION INFORMATION

The *Journal of Electronic Materials* (*JEM*) acts as a forum for the rapid circulation of the results of original research, enabling those in the electronic materials field to keep abreast of activities peripheral to their own. The journal focuses on electronic memory and logic structures, magnetic-optical recording media, superlattices, packaging, detectors, emitters, metallization technology, superconductors, and low thermal-budget processing and includes general papers on electronic materials for device application, structure making, reliability, and yield. Articles on methods for preparing and evaluating the chemical, physical, and electronic properties of electronic materials are also included.

JEM subscriptions are available in both print and electronic formats. In addition to receiving on-line access to the current issues of the journal, electronic subscribers have unlimited access to past journal issues with their subscription.

TMS and IEEE members receive significant discounts on *JEM* subscriptions. See the registration form in this program to subscribe to *JEM*.

Individual issues of the journal may also be purchased through the TMS Document Center for $25 a copy, plus shipping, at *http://doc.tms.org* or through TMS Subscriptions Representative Mark Cirelli, at the following address:

Mark Cirelli
TMS Subscriptions
184 Thorn Hill Road, Warrendale, PA 15086
Telephone: (724) 776-9000, ext. 251
Fax: (724) 776-3770 • E-mail: subscriptions@tms.org

INQUIRIES

For information regarding meeting registration and pricing, contact:
TMS Meeting Services
184 Thorn Hill Road
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For further information pertaining to the Device Research Conference, contact:
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Telephone: (845) 892-5142
Fax: (845) 892-2568
E-mail: welser@us.ibm.com
Or
Pallab Bhattacharya, *DRC Technical Program Chair*
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1301 Beal Avenue
Ann Arbor, MI 48109
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JOHN BARDEEN AWARD

2003 JOHN BARDEEN AWARD WINNER

The John Bardeen Award, established in 1994, recognizes an individual who has made outstanding contributions and is a leader in the field of electronic materials.

Recipient: Gerald B. Stringfellow

Citation: For his pioneering contributions to the science and technology of semiconductors and his technical leadership.

Gerald Stringfellow is dean of the College of Engineering at the University of Utah. He earned a B.S. in ceramic engineering from the University of Utah in 1964 and an M.S. and Ph.D. in materials science from Stanford University in 1966 and 1968, respectively. He has received many honors and awards, authored and edited books, and published articles in key journals.

"Electronic materials has been a late-developing area of materials science. Thus, the accomplishments of people in this area have often been overlooked. Recognition by our peers represents an important form of positive feedback to the recipient and motivation to younger researchers in the field. We all hope that what we are doing is making an impact. For this reason, it is very meaningful to me to be recognized by my materials science peers by being awarded the 2003 John Bardeen Award."

NOMINATIONS ARE NEEDED!

You are encouraged to submit a nomination for the TMS 2005 John Bardeen Award. This award recognizes an individual who has made an outstanding contribution and is a leader in the field of electronic materials.

The award is named in honor of John Bardeen who, through a career of theoretical and experimental research, set the foundation for the current state of understanding of electronic materials. Two areas where Bardeen had great impact were the invention and development of the solid-state transistor and the theory that developed greater understanding of superconductivity.

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2001 TMS Annual Meeting & Exhibition
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NOTES

PRELIMINARY SCHEDULE OF EVENTS

45TH TMS ELECTRONIC MATERIALS CONFERENCE

TUESDAY, JUNE 24, 2003

Registration ..... 3:00 PM–5:00 PM
Location ..... Olpin Union Building

WEDNESDAY, JUNE 25, 2003

Registration ..... 7:30 AM–5:00 PM
Location ..... Olpin Union Building

Exhibition..... 9:15 AM–4:00 PM & 7:00 PM–9:00 PM
Location ..... Olpin Union Building, Ballroom Corridor

Welcome Reception ..... 7:00 PM–9:00 PM
Location ..... Olpin Union Ballroom

SESSIONS

Plenary Session ..... 8:20 AM
(Including Student Awards Ceremony)
Location ..... Center Ballroom

Session VI. Carbon-Based and Nanowire Devices ..... 10:00 AM
Session VII A. Carbon-Based and Molecular Electronic Devices ..... 1:30 PM
Session VIII. Plastic Electronics ..... 3:30 PM

Session A. Nanoscale Characterization ..... 10:00 AM
Session B. Semiconductors: Processing and Oxidation ..... 10:00 AM
Session C. Si-Based Heterojunction Growth and Characterization ..... 10:00 AM
Session D. Spin-Dependent (or Spintronic) Electronic Materials – I ..... 10:00 AM
Session E. III-V Low-Dimensional Structures ..... 10:00 AM
Session F. Materials Integration: Wafer Bonding and Alternative Substrates – I ..... 10:00 AM
Session G. Nitrides: Advanced Characterization ..... 1:30 PM
Session H. Epitaxial Oxides and Ferroelectrics ..... 1:30 PM
Session I. Low Dimensional Structures for Devices ..... 1:30 PM
Session J. Low Dimensional Device Structures ..... 3:30 PM
Session K. Spin-Dependent (or Spintronic) Electronic Materials – II ..... 1:30 PM
Session L. Non-Destructive Testing and In-Situ Monitoring ..... 3:30 PM

THURSDAY, JUNE 26, 2003

Registration ..... 7:30 AM–4:00 PM
Location ..... Olpin Union Building

Exhibition ..... 9:00 AM–4:00 PM
Location ..... Olpin Union Building, Ballroom Corridor

Conference Banquet ..... 6:00 PM–9:00 PM
Location ..... Heritage Park

SESSIONS

FRIDAY, JUNE 27, 2003

Registration ..... 7:30 AM–10:00 AM
Location ..... Olpin Union Building

SESSIONS

TECHNICAL PROGRAM

EMC PLENARY LECTURE/STUDENT AWARDS

Ceremony: 8:20 AM

Room: Center Ballroom

Plenary Speaker: Stephen Forrest, Princeton University, Dept. of Electl. Engrg., EQUAD B301, Princeton, NJ 08544 USA

Topic: Organic Electronics: Is it for Real or is it Just the Latest Fad?

Break: 9:20 AM - 10:00 AM

JOINT DRC/EMC SESSIONS

Session VI: Joint DRC/EMC Invited Session Carbon-Based and Nanowire Devices

Wednesday AM
June 25, 2003 **Room: Saltair**

Session Chair: **Theresa Mayer, Pennsylvania State University, University Park, PA 16802-2705 USA**

10:00 AM Invited
VI.-1, Functional Semiconductor Nanowires and Their Optical Properties: *P. Yang*[1]; [1]University of California, Dept. of Chmst., Berkeley, CA 94720 USA

10:40 AM Invited
VI.-2, Pushing to the Performance Limit of Carbon Nanotube Electronics: *H. Dai*[1]; [1]Stanford University, Dept. of Chmst., Stanford, CA 94305 USA

11:20 AM Invited
VI.-3, Carbon Nanotube Field-Effect Transistors–An Example of an Ultra-Thin Body, Schottky Barrier Device: *J. Appenzeller*[1]; J. Knoch[2]; Ph. Avouris[1]; [1]IBM T. J. Watson Rsch. Ctr., Yorktown Heights, NY 10598 USA; [2]Massachusetts Institute of Technology, Cambridge, MA 02139 USA

Session VII.A:
Joint DRC/EMC Session
Carbon-Based and Molecular Electronic Devices

Wednesday PM
June 25, 2003 **Room: Saltair**

Session Chair: **Ray Tsui, Motorola Laboratories, Physl. Scis. Rsch. Labs., 7700 S. River Pkwy., Tempe, AZ 85284 USA**

1:30 PM
VII.A-1, Selective Growth and Electrical Properties of Single-Walled Carbon Nanotubes: *R. Zhang*[1]; I. Amlani[1]; R. Tsui[1]; J. Tresek[1]; J. Baker[1]; [1]Motorola Laboratories, Physl. Scis. Rsch. Labs., 7700 S. River Pkwy., Tempe, AZ 85284 USA

1:50 PM
VII.A-2, Negative Differential Resistance in a Bilayer Molecular Junction: *J. Le*[1]; Y. He[2]; C. Mead[1]; T. R. Hoye[2]; R. A. Kiehl[1]; [1]University of Minnesota, Dept. of Electl. Engrg., Minneapolis, MN 55455 USA; [2]University of Minnesota, Dept. of Chmst., Minneapolis, MN 55455 USA

2:10 PM
VII.A-3, Fabrication and I-V Characterization of Carbon Nanotube Single Electron Transistor Operated at Room Temperature: *T. Kamimura*[2,4]; K. Sakamoto[3]; M. Maeda[3]; K. Kurachi[3]; K. Matsumoto[1,2,4]; [1]National Institute of Advanced Industrial Science and Technology, 1-1-1 Umezono, Tsukuba, Ibaraki 305-8568 Japan; [2]University of Tsukuba, Japan; [3]Meiji University, Japan; [4]CREST/JST, Japan

2:30 PM
VII.A-4, Random Networks of Single-Wall Carbon Nanotubes: Electronic and Sensor Applications: *E. S. Snow*[1]; J. P. Novak[1]; D. Park[1]; [1]Naval Research Laboratory, Elect. Sci. & Tech. Div., Code 6876, Washington, DC 20375 USA

3:10 PM Break

Session VIII:
Joint DRC/EMC Invited Session
Plastic Electronics

Wednesday PM
June 25, 2003 **Room: Saltair**

Session Chair: **Lynn Loo, University of Texas at Austin, Austin, TX 78712 USA**

3:30 PM Invited
VIII.-1, Large Area Printing of Organic Transistors: *G. B. Blanchet*[1]; [1]Dupont, Central Rsch., Experimental Sta. E356/284, Wilmington, DE 19880 USA

4:10 PM Invited
VIII.-2, Stretchable and Deformable Macroelectronics: *S. Wagner*[1]; S. P. Lacour[1]; P.-H. I. Hsu[1]; J. C. Sturm[1]; Z. Suo[2]; [1]Princeton University, Dept. of Electl. Engrg., Princeton, NJ 08544 USA; [2]Princeton University, Depts. of Mechl. & Aeros. Engrg. & POEM, Princeton, NJ 08544 USA

4:50 PM Invited
VIII.-3, Nanoscale Transport in Organic Transistors and LEDs: *J. Zaumseil*[1]; T.-W. Lee[1]; J. W.P. Hsu[1]; Y.-L. Loo[2]; R. Cirelli[3]; J. A. Rogers[4]; [1]Bell Laboratories, 600 Mountain Ave., Murray Hill, NJ 07974 USA; [2]University of Texas at Austin, 1 University Sta., Austin, TX 78712 USA; [3]New Jersey Nanotechnology Center, 600 Mountain Ave., Murray Hill, NJ 07974 USA; [4]University of Illinois at Urbana-Champaign, 1304 W. Green St., Urbana, IL 61802 USA

Session A:
Nanoscale Characterization

Wednesday AM
June 25, 2003 **Room: Ballroom Center**

Session Chairs: **Julia Hsu, Lucent Technologies, Bell Labs., Murray Hill, NJ 07974 USA; Edward Yu, University of California, Dept. of Electl. & Compu. Engrg., La Jolla, CA 92093-0407 USA**

10:00 AM
A1, Cross-Sectional Scanning Tunneling Microscopy and Spectroscopy of InGaP/GaAs Heterojunctions: *Yang Dong*[1]; R. M. Feenstra[1]; M. P. Semtsiv[2]; W. T. Masselink[2]; [1]Carnegie Mellon University, Dept. of Physics, 5000 Forbes Ave., Pittsburgh, PA 15213 USA; [2]Humboldt-Universität zu Berlin, Dept. of Physics, Berlin D-10115 Germany

10:20 AM Student
A2, Local Conductivity and Surface Potential Measurements of Mg-Doped p-GaN: *Blake S. Simpkins*[1]; E. T. Yu[2]; U. Chowdhury[3]; M. M. Wong[3]; T. G. Zhu[3]; D. W. Yoo[3]; R. D. Dupuis[3]; [1]University of California at San Diego, Matls. Engrg., 9500 Gilman Dr., MC 0418, La Jolla, CA 92093-0418 USA; [2]University of California at San Diego, Electl. & Compu. Engrg., 9500 Gilman Dr., EBU1 Rm. 3809, MC 0407, La Jolla, CA 92093-0407 USA; [3]The University of Texas at Austin, Microelect. Rsch. Ctr., Austin, TX 78712 USA

10:40 AM
A3, Electrical Characterisation of Self-Assembled Nanoparticle Coated Crystals: Klaus Dieter Katzer[2]; Victor Khorenko[1]; Thai Quoc Do[1]; Wolfgang Mertin[2]; Franz Josef Tegude[1]; *Werner Prost*[1]; Douglas Cunningham[3]; Jose Luiz Martinez-Albertos[3]; Barry D. Moore[3]; [1]University Duisburg-Essen, Solid-State-Elect. Dept., Faculty of Engrg., Lotharstr. 55, Duisburg D-47048 Ger-

many; [2]University Duisburg-Essen, Dept. Werkstoffe der Elektrotechnik, Faculty of Engrg., Bismarkstr. 81, Duisburg D-47048 Germany; [3]University of Strathclyde, Dept. of Pure & Applied Chmst., 295 Cathedral St., Glasgow, Scottland G1 1XL UK

11:00 AM
A4, Near-Field Magneto-Photoluminescence of Quantum-Dot-Like Composition Fluctuations in GaAsN and InGaAsN Alloys: A. M. Mintairov[1]; P. A. Blagnov[2]; *J. L. Merz*[1]; V. M. Ustinov[2]; A. S. Vlasov[2]; A. R. Kovsh[2]; J. S. Wang[3]; L. Wei[3]; J. Y. Chi[3]; [1]University of Notre Dame, Dept. of Electl. Engrg., Notre Dame, IN 46556 USA; [2]Ioffe Physico-Technical Institute, RAS, St. Petersburg 194021 Russia; [3]Industrial Technology Research Institute, Hsinchu Taiwan

11:20 AM
A5, Structural/Compositional Characterization of ONO Stacks on Silicon: *Igor Levin*[1]; [1]NIST, Ceram. Div., Stop 8520, 100 Bureau Dr., Gaithersburg, MD 20899 USA

Session B: Semiconductors: Processing and Oxidation

Wednesday AM
June 25, 2003 **Room: Ballroom East**

Session Chairs: **Douglas C. Hall, University of Notre Dame, Dept. of Electl. Engrg., Notre Dame, IN 46556-5637 USA; Maria Losurdo, Institute of Inorganic Methodologies and Plasmas, Bari 70126 Italy**

10:00 AM
B1, High Resolution Secondary Ion Mass Spectrometry Analysis of Vertical Cavity Surface Emitting Lasers: *Yong K. Kim*[1]; Judith E. Baker[2]; Kent D. Choquette[3]; Andrew A. Allerman[4]; [1]University of Illinois at Urbana-Champaign, Matls. Sci. & Engrg., 208 N. Wright St., Urbana, IL 61801 USA; [2]University of Illinois at Urbana-Champaign, The Frederick Seitz Matls. Rsch. Lab., Urbana, IL 61801 USA; [3]University of Illinois at Urbana-Champaign, Electl. & Compu. Engrg., 208 N. Wright St., Urbana, IL 61801 USA; [4]Sandia National Laboratories, Albuquerque, NM 87185 USA

10:20 AM
B2, Improving Oxidation Uniformity for Uniform Performance of Large VCSEL Arrays: *Zhi-Jian Wei*[1]; Yuanming Deng[1]; Ryan Stevenson[1]; P. Daniel Dapkus[1]; Hanzhuang Liang[2]; [1]University of Southern California, Ctr. for Photonic Tech., Dept. of Electl. Engrg., Vivian Hall of Engrg. 309, 3651 USC Watt Way, Los Angeles, CA 90089 USA; [2]University of Southern California, Dept. of Aeros. & Mech. Engrg., Olin Hall of Engrg., Los Angeles, CA 90089 USA

10:40 AM
B3, Strain and the Thermodynamics of Buried AlGaAs Layer Oxidation: *Alexana Roshko*[1]; Roy H. Geiss[1]; Robert R. Keller[1]; Dennis W. Readey[2]; Ye Chen[1]; Kristine A. Bertness[1]; [1]NIST, 325 Broadway, Boulder, CO 80305 USA; [2]Colorado School of Mines, Golden, CO 80401 USA

11:00 AM
B4, Completely Pinning-Free Surface Passivation of GaAs (001) Surfaces by Forming Si and GaN Interface Control Layers on Ga-Rich (4x6) Surface: *Sanguan Anantathanasarn*[1]; Noboru Negoro[1]; Hideki Hasegawa[1]; [1]Hokkaido University, Rsch. Ctr. for Integrated Quantum Elect. & Grad. Sch. of Elect. & Info. Engrg., North-13, West-8, Sapporo 060-8628 Japan

11:20 AM
B5, Chemical and Electronic Studies of GaSb Surface Passivation Based on Non-Aqueous Sulfide Solutions: *Zhiyan Liu*[1]; Dovas A. Saulys[2]; Thomas F. Kuech[1]; [1]University of Wisconsin, Madison, Dept. of Chem. Engrg., 1415 Engrg. Dr., Madison, WI 53706 USA; [2]University of Wisconsin, Madison, Matls. Rsch. Sci. & Engrg. Ctr., 1415 Engrg. Dr., Madison, WI 53706 USA

11:40 AM
B6, Late News

Session C: Si-Based Heterojunction Growth and Characterization

Wednesday AM
June 25, 2003 **Room: Ballroom West**

Session Chairs: **Mike Tischler, Epitronics Corporation, Mesa, AZ 85210 USA; Tom Langdo, Amberwave Systems Corp, Salem, NH 03079 USA**

10:00 AM
C1, Fermi Level Stabilization in Plastically Strained SiGe Alloys: *P. N. Grillot*[1]; S. A. Ringel[2]; [1]LumiLeds Lighting, US LLC, 370 W. Trimble Rd., San Jose, CA 95131 USA; [2]The Ohio State University, Dept. of Electl. Engrg., Columbus, OH 43210 USA

10:20 AM
C2, Fabrication of Relaxed SiGe-On-Insulator Substrates by Oxygen Implantation into Pseudomorphic SiGe/Si Heterostructure: *Zhenghua An*[1]; Ricky K.Y. Fu[1]; Peng Chen[1]; Miao Zhang[2]; Paul K. Chu[1]; Chenglu Lin[2]; [1]City University of Hong Kong, Dept. of Physics & Matls. Sci., Tat Chee Ave., Kowloon Hong Kong; [2]Shanghai Institute of Microsystem and Information Technology, State Key Lab of Functional Matls. for Informatics, 865 Changning Rd., Shanghai China

10:40 AM Student
C3, Impact of Ion Implantation Damage and Thermal Budget on Mobility Enhancement in Strained Si n-MOSFETs: *G. Xia*[1]; H. M. Nayfeh[1]; M. J. Lee[1]; E. A. Fitzgerald[1]; D. A. Antoniadis[1]; J. L. Hoyt[1]; J. Li[2]; D. H.

Anjum[2]; R. Hull[2]; [1]Massachusetts Institute of Technology, Microsys. Tech. Lab., 60 Vassar St., MIT 39-427A, Cambridge, MA 02139 USA; [2]University of Virginia, Dept. of Matls. Sci., Charlottesville, VA 22904 USA

11:00 AM
C4, Impact of Virtual Substrate Ge Composition on Strained Si MOSFET Performance: *Sarah H. Olsen*[1]; Anthony G. O'Neill[1]; Sanatan Chattopadhyay[1]; Kelvin S.K. Kwa[1]; Luke S. Driscoll[1]; Steve J. Bull[2]; Andrew M. Waite[3]; Yue T. Tang[3]; Alan G.R. Evans[3]; David J. Norris[4]; Anthony G. Cullis[4]; Jing Zhang[5]; [1]Newcastle University, Sch. of Electl., Elect. & Compu. Engrg., Merz Ct., Newcastle upon Tyne NE1 7RU UK; [2]Newcastle University, Dept. of Mechl., Matls. & Mfg. Engrg., Newcastle upon Tyne NE1 7RU UK; [3]Southampton University, Dept. of Elect. & Compu. Sci., Southampton SO17 1BJ UK; [4]Sheffield University, Dept. of Elect. & Electl. Engrg., Sheffield S1 3JD UK; [5]Imperial College, Ctr. for Elect. Matls. & Devices, Physics Dept., London SW7 2BW UK

11:20 AM Student
C5, Very High Hole Mobility Strained Si/SiGe Layers for p-Type Heterostructure-Based PMOS Devices at Room and Low Temperatures: *Corina Elena Tanasa*[1]; Dimitri Antoniadis[2]; Christopher Leitz[3]; Larry Lee[4]; Gene Fitzgerald[5]; Judy Hoyt[2]; [1]Massachusetts Institute of Technology, Electl. Engrg., 26 Olmsted Rd., Apt. C, Stanford, CA 94305 USA; [2]Massachusetts Institute of Technology, Electl. Engrg., Bldg. 39, 4th Floor, 60 Vassar St., Cambridge, MA 02139 USA; [3]AmberWave Systems, 13 Garabedian Dr., Salem, NH 03079 USA; [4]Massachusetts Institute of Technology, Matls. Sci. & Engrg., 77 Mass. Ave., Bldg. 12-007, Cambridge, MA 02139-4307 USA; [5]Massachusetts Institute of Technology, Matls. Sci. & Engrg., 77 Mass. Ave., Bldg. 13-5153, Cambridge, MA 02139 USA

11:40 AM
C6, Partially- and Fully-Depleted Strained Si/Si1-yGey MOSFETs Fabricated on Relaxed Si1-xGex-On-Insulator (SGOI): *Zhiyuan Cheng*[1]; Jongwan Jung[2]; Arthur J. Pitera[1]; Minjoo L. Lee[1]; Hasan Nayfeh[2]; Judy L. Hoyt[2]; Dimitri A. Antoniadis[2]; Eugene A. Fitzgerald[1]; [1]Massachusetts Institute of Technology, Dept. of Matls. Sci. & Engrg., 77 Massachusetts Ave., Cambridge, MA 02139 USA; [2]Massachusetts Institute of Technology, Dept. of Electl. Engrg. & Compu. Sci., 77 Massachusetts Ave., Cambridge, MA 02139 USA

Session D: Spin-Dependent (or Spintronic) Electronic Materials - I

Wednesday AM
June 25, 2003 **Room: 101**

Session Chairs: **Chris Palmstrom, University of Minnesota, Dept. of Chem. Engrg. & Matls. Sci., Minneapolis, MN 55455 USA; Stefano Sanvito, Trinity College, Dept. of Physics, Dublin 2 Ireland**

10:00 AM
D1, High Efficiency Spin Injection from a Ferromagnetic Metal into a Semiconductor Through Fe/InAs Junction: *Kanji Yoh*[1]; Hiroshi Ohno[2]; Kazuhisa Sueoka[2]; Koichi Mukasa[2]; Manfred E. Ramsteiner[3]; [1]Hokkaido University, RCIQE, N13,W8, Kita-ku, Sapporo, Hokkaido 060-8628 Japan; [2]Hokkaido University, Grad. Sch. of Engrg., N13, W8, Kita-ku, Sapporo, Hokkaido 060-8628 Japan; [3]Paul Drude Institute, Hausvogteiplatz 5-7, Berlin D-10117 Germany

10:20 AM
D2, $Fe_{1-x}Co_x$/GaAs Spin Polarized Transport Devices: Growth, Characterization, and Transport Measurements: *B. D. Schultz*[1]; J. Strand[2]; A. F. Isakovic[2]; C. Adelmann[1]; P. A. Crowell[2]; C. J. Palmstrøm[1]; [1]University of Minnesota, Chem. Engrg. & Matls. Sci., Minneapolis, MN 55455 USA; [2]University of Minnesota, Sch. of Physics & Astron., Minneapolis, MN 55455 USA

10:40 AM
D3, On Spin Loss During Optical Spin Injection in ZnMnSe/CdZnSe Quantum Structures: *I. A. Buyanova*[1]; W. M. Chen[1]; K. Kayanuma[2]; Z. H. Chen[2]; A. Murayama[2]; Y. Oka[2]; A. A. Toropov[3]; Ya V. Terent'ev[3]; S. V. Sorokin[3]; A. V. Lebedev[3]; S. V. Ivanov[3]; P. S. Kop'ev[3]; [1]Linkoping University, Dept. of Physics & Measurement Tech., Linkoping 58183 Sweden; [2]Tohoku University, Inst. of Multidisciplinary Rsch. for Advd. Matls., Sendai 980-8577 Japan; [3]A.F. Ioffe Physico-Technical Institute, Russian Academy of Sciences, St. Petersburg 194021 Russia

11:00 AM
D4, Ultrafast Spin Dynamics Monitored by Pump-Probe Second Harmonic Generation: *Norman H. Tolk*[1]; Yuri D. Glinka[1]; T. V. Shahbazyan[1]; I. E. Perakis[1]; Jerome K. Miller[1]; Yingying Jiang[1]; Mikel E. Barry[1]; X. Liu[2]; Y. Sasaki[2]; J. K. Furdyna[2]; [1]Vanderbilt University, Physics & Astron., VU Sta. B 1807, Nashville, TN 37235 USA; [2]University of Notre Dame, Physics, Notre Dame, IN 46556 USA

11:20 AM
D5, Anisotropy of Spin Dephasing Rates in Quantum Wires: *Supriyo Bandyopadhyay*[1]; Sandipan Pramanik[1]; [1]Virginia Commonwealth University, Electl. Engrg., 601 W. Main St., Richmond, VA 23284 USA

11:40 AM
D6, Comparison of Electron Spin Relaxation Times in GaAs and GaN: *Srini Krishnamurthy*[1]; Mark van Schilfgaarde[2]; Nathan Newman[2]; [1]SRI International, Appl. Physl. Scis., 333 Ravenswood Ave., 306-21, Menlo Park, CA 94025 USA; [2]Arizona State University, Chem. & Matls. Engrg., PO Box 876006, Tempe, AZ 85287-6006 USA

Session E: III-V Low-Dimensional Structures

Wednesday AM
June 25, 2003 **Room: 102**

Session Chairs: **Ben Shannabrook, Naval Research Laboratories, Nanostruct. Sect., Washington, DC 20375-5000 USA; Mark Miller, University of Utah, Salt Lake City, UT 84112-0506 USA**

10:00 AM
E1, Growth of Uniform InAs Quantum Dots on Strain Modulated InGaAs Superlattice: *Zhenhua Zhang*[1]; Kuang-Chien Hsieh[1]; Keh-Yung Cheng[1]; [1]University of Illinois at Urbana-Champaign, Dept. of Electl. & Compu. Engrg., 150 Micro & Nanotech. Lab., 208 N. Wright St., Urbana, IL 61801 USA

10:20 AM
E2, Controlling the Electronic States of Self-Assembled InAs Quantum Dots by using InGaAs Layer: *Jin Soo Kim*[1]; Jin Hong Lee[1]; Sung Ui Hong[1]; Won Seok Han[1]; Ho-Sang Kwack[1]; Dae Kon Oh[1]; [1]Electronics and Telecommunications Research Institute (ETRI), Basic Rsch. Lab., 161 Gajeong-dong, Yuseong-gu, Daejeon 305-350 Korea

10:40 AM
E3, Photoexcited Carrier Dynamics in Self-Assembled InAs/AlAs Quantum Dots: *Z. Ma*[1]; K. Pierz[1]; P. Dawson[1]; E. O. Göbel[1]; J. Hübner[2]; M. Oestreich[3]; W. W. Rühle[2]; [1]Physikalisch-Technische Bundesanstalt, Lab. 2.41, Bundesallee 100, Braunschweig 38116 Germany; [2]Philipps-Universität Marburg, Fachbereich Physik, Renthof 5, Marburg 35032 Germany; [3]Universität Hannover, Institut für Festkörperphysik, Appelstr. 2, Hannover 30167 Germany

11:00 AM
E4, Determination of Subband Energy Levels of DQW AlGaAs Lasers by Photo-Reflectance and Self-Excited Electron Raman Scattering at 300K: *Wataru Susaki*[1]; [1]Osaka Electro-Communication University, 18-8 Hatsu-Cho, Neyagawa 572-8530 Japan

11:20 AM
E5, Effect of InAlGaAs Lateral Potential Confinement Layer on InAs Quantum Dot Infrared Photodetectors: *Eui-Tae Kim*[1]; Max Ho[1]; Zhonghui Chen[1]; Zhengmao Ye[2]; Joe C. Campbell[2]; Anupam Madhukar[1]; [1]University of Southern California, Nanostruc. Matls. & Devices Lab., 3651 Watt Way, VHE514, Los Angeles, CA 90089 USA; [2]University of Texas at Austin, Microelect. Rsch. Ctr., Bldg. 160, 10,100 Burnet Rd., Austin, TX 78712 USA

Session F: Materials Integration: Wafer Bonding and Alternative Substrates - I

Wednesday AM
June 25, 2003 **Room: Auditorium**

Session Chairs: **Thomas Kuech, University of Wisconsin, Dept. of Chem. Engrg., Madison, WI 53706 USA; Peter Moran, Michigan Technological University, Dept. of Chem. Engrg., Houghton, MI 49931 USA**

10:00 AM Student
F1, Heterogeneous Integration of (In,Ga)N Light-Emitting Diodes, CdSxSe1-x Filters and Silicon Photodetectors for Fluorescence-Detecting Microanalytical Systems: *ZhongSheng Luo*[1]; J. Alex Chediak[1]; Jeonggi Seo[2]; Nathan Cheung[3]; Luke Lee[4]; Timothy D. Sands[5]; [1]University of California, Berkeley, Matls. Sci. & Engrg., Cory 144MA, Berkeley, CA 94720 USA; [2]University of California, Berkeley, Applied Sci. & Tech. Grad. Grp., Berkeley, CA 94720 USA; [3]University of California, Berkeley, Dept. of Electl. Engrg., Berkeley, CA 94720 USA; [4]University of California, Berkeley, Dept. of Bioengrg., Berkeley, CA 94720 USA; [5]Purdue University, Sch. of Matls. Engrg., Sch. of Electl. & Compu. Engrg., & the Birck Nanotech. Ctr., W. Lafayette, IN 47906 USA

10:20 AM
F2, Dielectrophoretic Manipulation of Analytes for Biological Assay Applications: *Conrad David James*[1]; Dawn Jonita Bennett[1]; Murat Okandan[1]; Paul C. Galambos[1]; Seethambal S. Mani[1]; [1]Sandia National Laboratories, MEMS Device Tech., MS 1080, 1515 Eubank Blvd. SE, Albuquerque, NM 87123 USA

10:40 AM
F3, Characteristics of Si Thin Films Transferred onto Glass by Ion-Cut Employing Pulsed and Direct-Current (DC) Plasma Immersion Ion Implantation: *F. Lu*[2]; D. Qiao[2]; M Cai[2]; P. K.L. Yu[2]; S. S. Lau[2]; R. K.Y. Fu[1]; C. P. Li[1]; L. S. Hung[1]; Paul K. Chu[1]; [1]City University of Hong Kong, Dept. of Physics & Matls. Sci., Tat Chee Ave., Kowloon Hong Kong; [2]University of California at San Diego, ECE Dept., La Jolla, CA 92093 USA

11:00 AM
F4, Fabrication of Hybrid Distributed Bragg Reflectors using Metallic Wafer Bonding: *Hung-Cheng Lin*[1]; Zhenhua Zhang[1]; Chaofeng Xu[1]; Kuang-Chien Hsieh[1]; Keh-Yung Cheng[1]; [1]University of Illinois at Urbana-Champlaign, Dept. of Electl. & Compu. Engrg., 150 Micro & Nanotech. Lab., 208 N. Wright St., Urbana, IL 61801 USA

11:20 AM
F5, Late News

Session G:
Nitrides: Advanced Characterization

Wednesday PM
June 25, 2003 **Room: Ballroom Center**

Session Chairs: **Christian Wetzel, Uniroyal Optoelectronics, Tampa, FL 33619 USA; James Speck, University of California-Santa Barbara, Dept. of Matls., Santa Barbara, CA 93106 USA**

1:30 PM
G1, Dopant-Defect Interactions in GaN and Related Alloys: *P. N. Grillot*[1]; L. W. Cook[1]; J. Yu[1]; A. Y. Kim[1]; W. Goetz[1]; R. D. Pai[1]; J. C. Caylor[1]; J. W. Huang[1]; S. A. Stockman[1]; [1]LumiLeds Lighting, US LLC, 370 W. Trimble Rd., San Jose, CA 95131 USA

1:50 PM Student
G2, Investigation of Deep Level Luminescence at 2.45 eV in InGaN:Mg: *Bing Han*[1]; Melville P. Ulmer[2]; Bruce W. Wessels[1]; [1]Northwestern University, Dept. of Matls. Sci. & Engrg. & Matls. Rsch. Ctr., Evanston, IL 60208 USA; [2]Northwestern University, Dept. of Physics & Astron., Evanston, IL 60208 USA

2:10 PM
G3, Microcatholuminescence Spectroscopy of Localized Electronic States at Photoelectrochemically-Etched GaN Whiskers: *Xiaoling Sun*[1]; Leonard J. Brillson[1]; Tim Hossian[2]; Ilesanmi Adesida[2]; [1]The Ohio State University, Electl. Engrg., 205 Dreese Lab., 2015 Neil Ave., Columbus, OH 43210 USA; [2]University of Illinois, Dept. of Electl. & Compu. Engrg. & Microelect. Lab., Urbana, IL 61801 USA

2:30 PM
G4, Microstructural and Optical Properties of Heteroepitaxial GaN Grown on AlN Buffers on SiC: *B. J. Skromme*[1]; H. X. Liu[1]; M. K. Mikhov[1]; G. N. Ali[1]; K. C. Palle[1]; D. J. Smith[2]; Z. J. Reitmeyer[3]; R. F. Davis[3]; [1]Arizona State University, Dept. of Electl. Engrg., Box 875706, Tempe, AZ 85287-5706 USA; [2]Arizona State University, Ctr. for Solid State Sci., Box 871704, Tempe, AZ 85287-1704 USA; [3]North Carolina State University, Dept. of Matls. Sci. & Engrg., Raleigh, NC 27695-7907 USA

2:50 PM Student
G5, Atomic Ordering in InGaN Alloys: *Manu Rao*[1]; Yong-Qian Wang[1]; Subhash Mahajan[1]; [1]Arizona State University, Chem. & Matls. Engrg., Tempe, AZ 85287-6006 USA

3:10 PM Break

3:30 PM
G6, Electroreflectance Studies of Stark-Shifts and Polarization-Induced Electric Fields in InGaN Quantum Wells: *Robert J. Kaplar*[1]; Steven R. Kurtz[1]; Daniel D. Koleske[1]; Arthur J. Fischer[1]; [1]Sandia National Laboratories, PO Box 5800, MS 0601, Albuquerque, NM 87185 USA

3:50 PM
G7, Spectral Ellipsometry Characterization of MBE Grown GaN on 4H SiC: *Todd M. Holden*[1]; Fred H. Pollak[1]; Rajinder Sandhu[2]; Benjamin Heying[2]; Ioulia Smorchkova[2]; Mike Wojtowicz[2]; [1]Brooklyn College and New York State Center for Advanced Technology in Ultrafast Materials and Applications, Physics Dept., 3438N, 2900 Bedford Ave., Brooklyn, NY 11210 USA; [2]Northrop Grumman Space Technology, One Space Park, Redondo Beach, CA 90278 USA

4:10 PM
G8, Universal Theory for the Determination of Both Screw and Edge Dislocation Densities for GaN and Related Materials using High Resolution X-Ray Diffraction: *Simon Bates*[1]; [1]Bede Scientific Incorporated, 14 Inverness Dr. E., Ste. H-100, Englewood, CO 80112 USA

4:30 PM
G9, Characterization of Multiple Carriers in GaN and InN Epilayers Using Variable Magnetic Field Hall Measurements: *Craig H Swartz*[1]; Randy P. Tomkins[1]; Thomas Hubbard Myers[1]; Hai Lu[2]; William J. Schaff[2]; Lester F. Eastman[2]; [1]West Virginia University, Dept. of Physics, PO Box 6315, 224 Hodges Hall, Morgantown, WV 26506-6315 USA; [2]Cornell University, Dept. of Electl. & Compu. Engrg., Ithaca, NY 14853 USA

4:50 PM Student
G10, Characterization of Post-Epilayer Growth Anodized GaN/SiC Heterostructures: *Jie Bai*[1]; Michael Dudley[1]; Pelagia-Irene Gouma[1]; Marina Mynbaeva[2]; [1]Stony Brook University, Matls. Sci. & Engrg., Stony Brook, NY 11794-2275 USA; [2]Ioffe Physico-Technical Institute, St. Petersburg 194021 Russia

Session H:
Epitaxial Oxides and Ferroelectrics

Wednesday PM
June 25, 2003 **Room: Ballroom East**

Session Chairs: **Darrell Schlom, Pennsylvania State University, University Park, PA 16803-6602 USA; Charles Ahn, Yale University, Dept. of Applied Physics, New Haven, CT 06520-8284 USA**

1:30 PM Invited
H1, X-Ray Imaging of Thin Films and their Interface with Substrate with Sub-Angstrom Resolution: *Y. Yacoby*[1]; [1]Hebrew University, Racah Inst. of Physics, Jerusalem 91904 Isreal

2:10 PM
H2, Lanthanum Aluminate on Silicon for Alternative Gate Dielectric Applications: *L. F. Edge*[1]; V. Vaithyanathan[1]; J. Lettieri[1]; D. G. Schlom[1]; S. A. Chambers[2]; C. L. Hinkle[3]; G. Lucovsky[3]; Y. Yang[4]; S. Stemmer[4]; H. Li[5]; Y. Wei[5]; K. Eisenbeiser[5]; [1]Pennsylvania State University, Matls. Sci. & Engrg. Dept., Matls. Rsch. Inst., University Park, PA 16802 USA; [2]Pacific Northwest National Lab-

oratory, Environml. Molecular Scis. Lab., Richland, WA 99352 USA; [3]North Carolina State University, Dept. of Physics, Raleigh, NC 27695 USA; [4]University of California at Santa Barbara, Matls. Dept., Santa Barbara, CA 93106 USA; [5]Motorola Labs, Physl. Sci. Rsch. Lab., Tempe, AZ 85284 USA

2:30 PM
H3, Epitaxial MgO with a SrO Buffer Layer on Si(001) by Molecular Beam Epitaxy: Feng Niu[1]; *Anthony L. Meier*[1]; Bruce W. Wessels[1]; [1]Northwestern University, Matls. Sci. & Engrg., 2220 Campus Dr., Evanston, IL 60208 USA

2:50 PM
H4, Integration of $BaTiO_3$ Ferroelectric Thin Films with GaAs Using MgO and Al_xO_y Buffer Layers: *Timothy Murphy*[1]; Ding-Yuan Chen[1]; Jamie D. Phillips[1]; [1]University of Michigan, Electl. Engrg. & Compu. Sci., Solid State Elect. Lab., 1301 Beal Ave., Ann Arbor, MI 48109-2122 USA

3:10 PM Break

3:30 PM
H5, Structural and Dielectric Characterization of Epitaxial Rare-Earth Scandate Thin Films: *J. Schubert*[1]; Y. Jia[2]; M. Biegalski[2]; O. Trithaveesak[1]; S. Trolier-McKinstry[2]; D. G. Schlom[2]; [1]Forschungszentrum Jülich GmbH, Inst. für Schichten & Grenzflächen (ISG 1-IT), Leo Brandt Str.13, 52425 Jülich Germany; [2]The Pennsylvania State University, Dept. of Matls. Sci. & Engrg., University Park, PA 16802 USA

3:50 PM
H6, Thermodynamics of Cavity Nucleation in the Ion-Implanted Single Crystal BaTiO3 for Ferroelectric Thin Film Layer Transfer: *Young-Bae Park*[1]; Harry Atwater[1]; Jennifer Ruglovsky[1]; [1]Harvard University, Appl. Physics Dept., McKay Gordon Lab., 9 Oxford St., Cambridge, Boston, MA 02138 USA

4:10 PM
H7, Electric Field Cycling-Induced Oxygen Tracer Drift in PZT Thin Films for Ferroelectric Memories: *Lawrence F. Schloss*[1]; Paul C. McIntyre[1]; [1]Stanford University, Matls. Sci. & Engrg., 476 Lomita Mall, McCullough Bldg., Rm. 205, Stanford, CA 94305-4045 USA

4:30 PM
H8, Ion Beam Etching of Lead Zirconate Titanate Films: *Steven J. Gross*[1]; Qingqi Zhang[2]; Srinivas Tadigadapa[1]; Susan Trolier-McKinstry[1]; Thomas N. Jackson[1]; [1]The Pennsylvania State University, Electl. Engrg., 121 Electl. Engrg. E., University Park, PA 16802 USA; [2]Geospace Research Inc., 550 N. Continental Blvd., El Segundo, CA 90245 USA

Session I: Low Dimensional Structures for Devices

Wednesday PM
June 25, 2003 **Room: Ballroom West**

Session Chairs: **Glenn Solomon, Stanford University, Stanford, CA 94305-4075 USA; James Merz, University of Notre Dame, Notre Dame, IN 46556-5602 USA**

1:30 PM
I1, Characterization of MBE-Grown Silicon Germanium/Silicon Multiple Quantum Wells for Terahertz Detector Applications: *Pengcheng Lv*[1]; Samit K. Ray[1]; Ralph T. Troeger[1]; Thomas N. Adam[1]; Xin Zhang[1]; Chaoying Ni[2]; James Kolodzey[1]; [1]University of Delaware, Dept. of Electl. & Compu. Engrg., 140 Evans Hall, Newark, DE 19716 USA; [2]University of Delaware, Dept. of Matls. Sci. & Engrg., 201 Dupont Hall, Newark, DE 19716 USA

1:50 PM
I2, Mid-Infrared Ge Quantum Dot Photodetector: *Fei Liu*[1]; S. Tong[1]; J. L. Liu[2]; K. L. Wang[1]; [1]University of California at Los Angeles, Device Rsch. Lab., Dept. of Electl. Engrg., Los Angeles, CA 90095-1594 USA; [2]University of California at Riverside, Dept. of Electl. Engrg., Riverside, CA 92521 USA

2:10 PM
I3, Phase Diagram of the Stranski-Krastanov Mode for the SiGe/Si Heterostructure System and Application for Solar Cells with Self-Assembled Ge Quantum Dots: *Kazuo Nakajima*[1]; [1]Tohoku University, Inst. for Matls. Rsch., Katahira 2-1-1, Aoba-ku, Sendai, Miyagi 980-8577 Japan

2:30 PM
I4, Stark Shift in Multiple Quantum Well Structures Containing a Delta-Doping Superlattice for Amplitude Modulation: *Patricia Lustoza Souza*[1]; Christiana Villas-Boas Tribuzy[1]; Sandra Marcela Landi[1]; Mauricio Pamplona Pires[1]; Magnus Borgström[1]; [1]Pontifícia Universidade Católica do Rio de Janeiro, LabSem/CETUC, Rua Marquês de São Vicente 225, Rio de Janeiro, RJ 22453-900 Brazil

2:50 PM
I5, Fabrication and Speed-Power Characterization of Quantum Wire Switches with Nanometer-Scale Schottky Gate Control for GaAs Hexagonal BDD Quantum Circuits: *Miki Yumoto*[1]; Seiya Kasai[1]; Hideki Hasegawa[1]; [1]Hokkaido University, Rsch. Ctr. for Integrated Quantum Elect. & Grad. Sch. of Elect. & Info. Engrg., N13, W8, Sapporo 060-8628 Japan

3:10 PM Break

Session J:
Low Dimensional Device Structures

Wednesday PM
June 25, 2003 **Room: Ballroom West**

Session Chairs: **Glenn Solomon, Stanford University, Stanford, CA 94305-4075 USA; James Merz, University of Notre Dame, Notre Dame, IN 46556-5602 USA**

3:30 PM
J1, Spatial Ordering of InAs Quantum Dots in a Microdisk Cavity to Achieve Large Spontaneous Emission Enhancement: *Zhigang Xie*[1]; [1]Stanford University, Stanford, CA 94305 USA

3:50 PM
J2, Effect of Si-Delta-Doping on the Luminescence and Laser Properties of InP/InAlGaP Quantum Dots: *X. B. Zhang*[1]; R. D. Heller[1]; Russell D. Dupuis[1]; Gabriel Walter[2]; Nick Holonyak[2]; [1]The University of Texas at Austin, Microelect. Rsch. Ctr., PRC-MER-R9900, 10100 Burnet Rd., Austin, TX 78712 USA; [2]The University of Illinois at Urbana-Champaign, Ctr. for Compound Semiconductor Microelect., Urbana, IL 61801 USA

4:10 PM
J3, InP Quantum Dot Coupled to InGaP Quantum Well Heterostructure for Room Temperature Continuous Wave Lasers Grown by Metalorganic Chemical Vapor Deposition: *Richard Dean Heller*[1]; X. B. Zhang[1]; Gabriel Walter[2]; Nick Holonyak[2]; David T. Mathes[3]; Robert Hull[3]; Russell D. Dupuis[1]; [1]The University of Texas at Austin, Microelect. Rsch. Ctr., PRC/MER 1.608E, Austin, TX 78712 USA; [2]The University of Illinois at Urbana-Champaign, Ctr. for Compound Semiconductor Microelect., Urbana, IL 61801 USA; [3]The University of Virginia, Dept. of Matls. Sci. & Engrg., Charlottesville, VA 22903 USA

4:30 PM
J4, Tunneling Between a Single Impurity and a Quantum Dot: *Erik M. Lind*[1]; Boel Gustafson[1]; Ines Pietzonka[1]; Lars-Erik Wernersson[1]; [1]Lund University, Solid State Physics, Box 118, Lund S-22100 Sweden

4:50 PM
J5, Dependence of InAs Quantum Dots Optical Properties on Capping Materials: GaNAs Strain Compensating Layers (SCL) and GaAs Layers: X. Q. Zhang[1]; S. Ganapathy[1]; *Ikuo Suemune*[1]; B. J. Kim[2]; T. Y. Seong[2]; H. Machida[3]; N. Shimoyama[3]; [1]Hokkaido University, Rsch. Inst. for Elect. Sci., Kita-12, Nishi-6, Kita-ku, Sapporo 060-0812 Japan; [2]Kwangju Institute of Science and Technology, Ctr. for Frontier Matls. & Dept. of Matl. Sci. & Engrg., Kwangju 500-712 Korea; [3]Trichemical Laboratory, Uenohara 8154-217, Kitatsurugun, Yamanashi 409-01 Japan

Session K:
Spin Dependent (or Spintronic) Electronic Materials - II

Wednesday PM
June 25, 2003 **Room: 101**

Session Chairs: **Stefano Sanvito, Trinity College, Dept. of Physics, Dublin 2 Ireland; Chris Palmstrom, University of Minnesota, Dept. of Chem. Engrg. & Matls. Sci., Minneapolis, MN 55455 USA**

1:30 PM Student
K1, Magnetic Properties of Mg and Mn Co-Doped GaN Films Grown by PEMBE: *Min-Chang Jeong*[1]; Moon-Ho Ham[1]; Jae-Min Myoung[1]; [1]Yonsei University, Dept. of Matls. Sci. & Engrg., 134 Shinchon-dong, Seodaemun-gu, Seoul 120-749 Korea

1:50 PM
K2, Electronic Properties of Epitaxial (In,Mn)As: *Steven J. May*[1]; Aaron J. Blattner[1]; Bruce W. Wessels[1]; [1]Northwestern University, Matls. Sci. & Engrg., 2220 Campus Dr., Evanston, IL 60208-3108 USA

2:10 PM
K3, Room Temperature Ferromagnetic Properties of Mn-Doped InxGa1-xN: *Meredith Lynn Reed*[1]; Maria K. Ritums[1]; Mason J. Reed[1]; N. A. El-Masry[1]; S. M. Bedair[2]; J. M. Zavada[3]; [1]North Carolina State University, Matls. Sci. & Engrg., 234 Riddick Labs., Box 7907, Raleigh, NC 27695-7907 USA; [2]North Carolina State University, Electl. & Compu. Engrg., 232 Daniels Hall, Box 7911, Raleigh, NC 27695 USA; [3]Army Research Office, Research Triangle Park, NC 27709 USA

2:30 PM
K4, Ferromagnetic GaMnAs and GaMnP Formed by Mn Ion Implantation and Pulsed Laser Melting: *M. A. Scarpulla*[1]; O. D. Dubon[1]; Kin M. Yu[2]; W. Walukiewicz[2]; O. Monteiro[2]; [1]University of California, Berkeley and Lawrence Berkeley National Laboratory, Berkeley, CA 94720 USA; [2]Lawrence Berkeley National Laboratory, Berkeley, CA 94720 USA

2:50 PM
K5, Late News

Session L:
Non-Destructive Testing and In-Situ Monitoring

Wednesday PM
June 25, 2003 **Room: 101**

Session Chairs: **Kurt Eyink, US Air Force, AFRL/MLPO, Wright Patterson AFB, OH 45433-7707 USA; Mark Goorsky, University of California-Los Angeles, Dept. of Matl. Sci. & Engrg., Los Angeles, CA 90095-1595 USA**

3:30 PM
L1, SiC Epitaxial Film Characterization Using FTIR Spectroscopy and Improved Parameter Estimation: *Michael S. Mazzola*[1]; Janice P. Mazzola[2]; Swapna G. Sunkari[1]; Jeffrey L. Wyatt[1]; Yaroslav Koshka[1]; [1]Mississippi State University, Electl. & Compu. Engrg., Box 9571, Miss. State, MS 39762 USA; [2]SemiSouth Laboratories, Inc., 1 Research Blvd., Ste. 201, Starkville, MS 39759 USA

3:50 PM
L2, Spectroscopic Ellipsometric Monitoring of Planar InAs Growth on GaAs(001): *Kurt G. Eyink*[1]; Larry Grazulis[1]; Krishnamurthy Mahalingam[1]; [1]Air Force Research Laboratory, AFRL/MLPS, 3005 P St., Ste. 6, Wright-Patterson AFB 45433-7707 USA

4:10 PM
L3, Impact of Low Frequency Magnetic Field on the Electrical Characteristics of Shallow P+N Junctions: *Moustapha Abdelaoui*[1]; Malika Idrissi-Benzohra[1]; Halima Mehor[1]; Mohamed Benzohra[1]; François Olivie[2]; [1]LEMI - Université de Rouen, Rue Lavoisier, Mont Saint Aignan 76821 France; [2]LAAS - CNRS, 7 Ave. du Col. Roche, Toulouse 31077 France

4:30 PM
L4, Using High-Resolution X-Ray Diffraction and X-Ray Topography to Pinpoint Defects in GaAs Wafers: *Christine H. Russell*[1]; Simon Bates[1]; Yauzo Wang[2]; [1]Bede Scientific Incorporated, 14 Inverness Dr. E., Ste. H-100, Englewood, CO 80112 USA; [2]Anadigics Incorporated, 141 Mount Bethel Rd., Warren, NJ 07059 USA

4:50 PM
L5, Late News

Session M:
Metal Contacts to Semiconductors

Wednesday PM
June 25, 2003 **Room: 102**

Session Chairs: **Tae-Yeon Seong, Kwangju Institute of Science & Technology, Semiconductor Thin Film Lab., Puk-gu, Kwangju 500-712 Korea; Suzanne Mohney, Pennsylvania State University, Dept. of Matls. Sci. & Engrg., University Park, PA 16802 USA**

1:30 PM
M1, Thermodynamically Stable NiSi Ohmic Contacts to n-Type 6H-SiC: *Christpher Deeb*[1]; [1]Case Western Reserve University, Matls. Sci. & Engrg., 10900 Euclid Ave., White Bldg., Cleveland, OH 44106 USA

1:50 PM Student
M2, Comparison and Optimization of Ohmic Contacts on p-Type Silicon Carbide: *Feroz Abdul Mohammad*[1]; Lisa M. Porter[1]; [1]Carnegie Mellon University, Matls. Sci. & Engrg., 5000 Forbes Ave., REH -149, Pittsburgh, PA 15213 USA

2:10 PM
M3, Catalytic Graphitization and Ohmic Contact Formation on 4H-SiC: *Weijie Lu*[1]; William C. Mitchel[2]; Gerald R. Landis[3]; Tiffany R. Crenshaw[1]; Warren Eugene Collins[1]; [1]Fisk University, Dept. of Physics, 1000 17th Ave. N., Nashville, TN 37208 USA; [2]Air Force Research Laboratory, Matls. & Mfg. Direct., Wright-Patterson AFB, OH 45433 USA; [3]University of Dayton Research Institute, Dayton, OH 45469 USA

2:30 PM Student
M4, WSix Schottky Contacts to Both n-SiC and n-GaN: *Jihyun Kim*[1]; S. J. Pearton[3]; G. Y. Chung[4]; C. R. Abernathy[3]; R. D. Briggs[2]; A. G. Baca[2]; F. Ren[1]; [1]University of Florida, Chem. Engrg., Chem. Engrg. Bldg., Gainesville, FL 32611 USA; [2]Sandia National Laboratories, Albuquerque, NM 87185 USA; [3]University of Florida, Matl. Sci. & Engrg., Gainesville, FL 32611 USA; [4]Sterling Semiconductor, Tampa, FL 33619 USA

2:50 PM
M5, Low Resistance and Thermally Stable Re/Ti/Au Ohmic Contacts to n-ZnO: *Sang-Ho Kim*[1]; June O. Song[1]; Kyung-Kook Kim[1]; Tae-Yeon Seong[1]; [1]Kwangju Institute of Science and Technology, Dept. of Matls. Sci. & Engrg., 1 Oryong-dong, Puk-gu, Gwangju Korea

3:10 PM Break

3:30 PM
M6, Re-Examination of Barrier Heights between Metals and Se-Passivated n-Type Si(100): Shruddha Agarwal[1]; Darshak Udeshi[1]; *Meng Tao*[1]; Nasir Basit[1]; Eduardo Maldonado[1]; Wiley P. Kirk[1]; [1]University of Texas at Arlington, NanoFAB Ctr., Box 19072, Arlington, TX 76019 USA

3:50 PM
M7, Ohmic Contacts to n-GaSb and n-GaInAsSb: *Robin K. Huang*[1]; Christine A. Wang[1]; Michael K. Connors[1]; Christopher T. Harris[1]; Daniel A. Shiau[1]; [1]Massachusetts Institute of Technology Lincoln Laboratory, 244 Wood St., Lexington, MA 02420 USA

4:10 PM Student
M8, Interfacial Reactions of Mn Thin Films on GaAs (100): *J. L. Hilton*[1]; B. D. Schultz[1]; C. J. Palmstrøm[1]; [1]University of Minnesota, Chem. Engrg. & Matls. Sci., Minneapolis, MN 55455 USA

4:30 PM
M9, II-VI Ultra-Violet Detectors: Issues of Schottky Metal Contacts: Zhen Guo[1]; Wing Yan Law[1]; *Iam Keong Sou*[1]; [1]The Hong Kong University of Science and Technology, Dept. of Physics, Clear Water Bay, Kowloon, Hong Kong China

4:50 PM
M10, Late News

Session N: Materials Integration: Wafer Bonding and Alternative Substrates - II

Wednesday PM
June 25, 2003 **Room: Auditorium**

Session Chairs: **Karl Hobart, Naval Research Laboratory, Washington, DC 20375 USA; Matthew Seaford, RF Micro Devices, Greensboro, NC 27409 USA**

1:30 PM Student
N1, Scanning Photocurrent Measurements for the Nondestructive Evaluation of Waferbonded Interfaces: *Phil Mages*[1]; Justin Bickford[2]; L. S. Yu[2]; D. Qiao[2]; T. Suni[3]; K. Henttinen[3]; I. Suni[3]; S. S. Lau[2]; P. K.L. Yu[2]; [1]University of California, San Diego, Matls. Sci./ECE, MC 0418, 9500 Gilman Dr., La Jolla, CA 92093-0418 USA; [2]University of California, San Diego, ECE, MC 0407, 9500 Gilman Dr., La Jolla, CA 92093-0407 USA; [3]VTT Centre for Microelectronics, PO Box 1208, 02044 VTT Finland

1:50 PM Student
N2, Integration of Lattice-Mismatched Semiconductors with Si using SiO_2 CMP Layers and Wafer Bonding Ge/GeSi/Si Virtual Substrates: *Arthur J. Pitera*[1]; Gianni Taraschi[1]; Minjoo L. Lee[1]; Chris W. Leitz[2]; Eugene A. Fitzgerald[3]; [1]Massachusetts Institute of Technology, Dept. of Matls. Sci. & Engrg., 77 Massachusetts Ave., Rm. 13-4154, Cambridge, MA 02139 USA; [2]AmberWave Systems Corporation, 13 Garabedian Dr., Salem, NH 03079 USA; [3]Massachusetts Institute of Technology, Dept. of Matls. Sci. & Engrg., 77 Massachusetts Ave., Rm. 13-5153, Cambridge, MA 02139 USA

2:10 PM Student
N3, Stress Balance of Si/SiGe and SiO_2/SiGe on Compliant Substrates: *Haizhou Yin*[1]; K. D. Hobart[2]; S. R. Shieh[3]; T. S. Duffy[3]; F. J. Kub[2]; J. C. Sturm[1]; [1]Princeton University, Dept. of Electl. Engrg., E-Quad, Olden St., Princeton, NJ 08540 USA; [2]Naval Research Laboratory, Washington, DC 20375 USA; [3]Princeton University, Dept. of Geoscis., Princeton, NJ 08544 USA

2:30 PM Student
N4, Adhesive Wafer Bonding of GaAs on Si and its Effect of SeS2 Treatments on the Structural Modification Changes of n-GaAs(100) Substrate: *Premchander Perumal*[1]; *Krishnan Baskar*[1]; [1]Anna University, Crystal Growth Ctr., Chennai, Tamil Nadu 600025 India

2:50 PM
N5, Late News

3:10 PM Break

3:30 PM Student
N6, Wafer-Fused nAlGaAs-pGaAs-nGaN Heterojunction Bipolar Transistors: *Sarah Marie Estrada*[1]; Huili Xing[2]; Andrew Huntington[1]; Andreas Stonas[2]; Larry Coldren[2]; Steven DenBaars[1]; Umesh Mishra[2]; Evelyn Hu[2]; [1]University of California, Santa Barbara, Matls. Dept., Santa Barbara, CA 93106-5050 USA; [2]University of California, Santa Barbara, Electl. & Compu. Engrg. Dept., Santa Barbara, CA 93106 USA

3:50 PM
N7, Wafer-Bonding and Epitaxial Transfer of GaInAsSb/GaSb to GaAs Substrates for Monolithic Series Interconnection of Thermophotovoltaic Cells: *Christine A. Wang*[1]; D. A. Shiau[1]; P. G. Murphy[1]; P. W. O'Brien[1]; M. K. Connors[1]; R. K. Huang[1]; A. C. Anderson[1]; D. Donetsky[2]; S. Anikeev[2]; G. Belenky[2]; D. M. Depoy[3]; G. Nichols[3]; [1]Massachusetts Institute of Technology Lincoln Laboratory, 244 Wood St., Lexington, MA 02420 USA; [2]State University of New York, Stony Brook, NY 11794 USA; [3]Lockheed Martin Corporation, Schenectady, NY 12301 USA

4:10 PM Student
N8, III-V on Insulator Composite Substrates: *Sumiko Lynn Hayashi*[1]; Rajinder Singh Sandhu[2]; David Bruno[1]; Mike Wojtowicz[2]; Mark S. Goorsky[1]; [1]University of California, Los Angeles, Dept. Matls. Sci. & Engrg., 2521 Boelter Hall, 420 Westwood Plaza, Los Angeles, CA 90095 USA; [2]Northrop Grumman, Space Tech., 1 Space Park Dr., Redondo Beach, CA 90278 USA

4:30 PM Student
N9, $IN_{0.4}GaAs/IN_{0.2}GaAs$ Multi-Quantum-Wells Grown on Twist Bonded GaAs Compliant Substrates: *Yuanming Deng*[1]; P. Daniel Dapkus[1]; [1]University of Southern California, Dept. of Electl. Engrg. - Electrophysics, 3651 USC Watt Way, VHE309, Los Angeles, CA 90089 USA

4:50 PM
N10, Fabrication of AlN-Silicon-on-Insulator Structure and Computer Simulation of Self-Heating Effect: *Ming Zhu*[1]; Zhenghua An[1]; Qing Lin[2]; Zhengxuan Zhang[2]; Ricky K.Y. Fu[1]; Paul K. Chu[1]; Chenglu Lin[2]; [1]City University

of Hong Kong, Dept. of Physics & Matls. Sci., Tat Chee Ave., Kowloon Hong Kong; [2]Chinese Academy of Sciences, Shanghai Inst. of Microsys. & Info. Tech., State Key Lab. of Functl. Matls. for Informatics, 865 Changning Rd., Shanghai 200050 China

Session O: Nitrides: Defect Reduction and Epitaxy

Thursday AM
June 26, 2003 **Room: Ballroom Center**

Session Chairs: **Russell Dupuis, University of Texas, Microelect. Rsch. Ctr., Austin, TX 78712-1100 USA; Christian Wetzel, Uniroyal Optoelectronics, Tampa, FL 33619 USA**

8:20 AM Student
O1, Nanometer Scale Lateral Epitaxy Overgrowth of GaN Employing Block Copolymer Lithography: *R. R. Li*[1]; Dawei Ren[1]; Xingang Zhang[2]; Paul D. Dapkus[3]; M. E. Thompson[4]; C. K. Harrison[5]; P. M. Chaikin[6]; R. A. Register[7]; D. H. Adamson[8]; [1]University of Southern California, Matls. Sci., 3651 USC Watt Way, VHE 309, Los Angeles, CA 90089 USA; [2]Luminent Inc., 20550 Nordhoff St., Chatworth, CA 91311 USA; [3]University of Southern California, EE-Electrophysics Dept., 3651 USC Watt Way, VHE 314, Los Angeles, CA 90089 USA; [4]University of Southern California, Chmst. Dept., Los Angeles, CA 90089 USA; [5]National Institute of Standard and Technology, Polymer Div., Gaithersburg, MD 20899 USA; [6]Princeton University, Physics Dept., Princeton, NJ 08544 USA; [7]Princeton University, Chem. Engrg. Dept., Princeton, NJ 08544 USA; [8]Princeton Materials Institute, Princeton, NJ 08544 USA

8:40 AM
O2, Developing Cantilever Epitaxy of GaN for Advanced Devices: *David M. Follstaedt*[1]; Daniel D. Koleske[2]; Christine C. Mitchell[2]; Nancy A. Missert[3]; Paula P. Provencio[4]; Andrew A. Allerman[2]; [1]Sandia National Laboratories, Physl. & Chem. Scis. Ctr., MS 1056, Albuquerque, NM 87185-1056 USA; [2]Sandia National Laboratories, Physl. & Chem. Scis. Ctr., MS 0601, Albuquerque, NM 87185-1056 USA; [3]Sandia National Laboratories, Physl. & Chem. Scis. Ctr., MS 1415, Albquerque, NM 87185-1415 USA; [4]Sandia National Laboratories, Physl. & Chem. Scis. Ctr., MS 1421, Albuquerque, NM 87185-1421 USA

9:00 AM Student
O3, Reduction of Dislocation Density in MOVPE GaN Films by ELOG Without Photolithography and Chemical Etching: *Xiaolong Fang*[1]; Yongqian Wang[1]; Hira Meidia[1]; Subhash Mahajan[1]; [1]Arizona State University, Chem. & Matls. Engrg., Tempe, AZ 85287-6006 USA

9:20 AM
O4, Multiple Quantum Well AlGaN Structure Grown on Patterned Sapphire Substrate: *Mikhail E. Gaevski*[1]; Jian Ping Zhang[1]; Vinod Adivarahan[1]; Maxim Shatalov[1]; Jinwei Yang[1]; Grigory Simin[1]; M. Asif Khan[1]; [1]University of South Carolina, Electl. Engrg. Dept., 301 Main St., Columbia, SC 29208 USA

9:40 AM Student
O5, InGaN/GaN Buried Heterostructure Formed by MOCVD Growth on Nonplanar Substrates: *Dawei Ren*[1]; Xingang Zhang[1]; Wei Zhou[1]; P. Daniel Dapkus[1]; Daniel H. Rich[2]; [1]University of Southern California, Compound Semiconductor Lab., 3651 Watt Way, VHE 313, Los Angeles, CA 90089 USA; [2]University of Southern California, Dept. of Matls. Sci., 3651 Watt Way, VHE 607, Los Angeles, CA 90089 USA

10:00 AM Break

10:20 AM Student
O6, Study on Sapphire Nitridation in Hydride Vapor Phase Epitaxy System: Nitridation Mechanism: Fransiska Dwikusuma[1]; Thomas F. Kuech[1]; [1]University of Wisconsin, Dept. of Chem. Engrg., 1415 Engineering Dr., Madison, WI 53706 USA

10:40 AM
O7, Interface Interdiffusion and Chemical Reaction in GaN/Sapphire and AlGaN/Sapphire Heterojunctions: *Xiaoling Sun*[1]; Steve H. Goss[1]; Leonard J. Brillson[1]; David C. Look[2]; [1]The Ohio State University, Electl. Engrg., 205 Dreese Lab., 2015 Neil Ave., Columbus, OH 43210 USA; [2]Wright State University, Univ. Rsch. Ctr., Dayton, OH 45435 USA

11:00 AM
O8, The Chemistry and Kinetics of LiGaO2 Substrate Nitridation for the Optimization of GaN Epitaxial Growth: *Maria Losurdo*[1]; Giovanni Bruno[1]; April S. Brown[2]; Sangbeom Kang[3]; Tong-Ho Kim[3]; Alan W. Doolittle[3]; [1]Institute of Inorganic Methodologies and of Plasmas, IMIP-CNR, via Orabona, 4, Bari Italy; [2]Duke University, Dept. of Electl. & Compu. Engrg., 128 Hudson Hall, Durham, NC USA; [3]Georgia Institute of Technology, Atlanta, GA 30332 USA

11:20 AM
O9, Identification of the Adducts Formed between Magnesocene ($MgCp_2$) and NH_3: Origin of the Memory Effect: *George T. Wang*[1]; J. Randall Creighton[1]; [1]Sandia National Laboratories, PO Box 5800, MS 0601, Albuquerque, NM 87185-0601 USA

Session P:
Epitaxy I: Growth and Characterization

Thursday AM
June 26, 2003 **Room: Ballroom East**

Session Chairs: **Jerry Woodall, Yale University, Dept. of Elect. Engrg., New Haven, CT 06520 USA; Gary Wicks, University of Rochester, Inst. of Optics, Rochester, NY 14627 USA**

8:20 AM
P1, A Chemical and Kinetic Study of P-for-As Anion Exchange Reactions in GaAs/GaAsP Superlattice Structures: *April Susan Brown*[1]; Maria Losurdo[2]; Giovanni Bruno[2]; Terence Brown[3]; Gary May[3]; [1]Duke University, 128 Hudson Hall, Durham, NC 27708 USA; [2]IMIP-CNR, Bari Italy; [3]Georgia Tech, Atlanta, GA 30332 USA

8:40 AM
P2, Growth and Polarization Anisotropy Characterization of Ordered InGaAsP for Optical Fiber Applications: Stefan Neumann[1]; *Werner Prost*[1]; Jochen Spieler[2]; Robert Blache[2]; Evguenia Khorenko[1]; Gottfried H. Doehler[2]; Franz Josef Tegude[1]; [1]Universität Duisburg-Essen, Solid-State Elect. Dept., Lotharstr. 55, Duisburg D-47048 Germany; [2]Universität Erlangen-Nuernberg, Technische Physik 1, Erwin-Rommel-Str. 1, Erlangen D-91058 Germany

9:00 AM
P3, Surface Structure and Stability of Pseudomorphic InGaAs Layers: *Joanna Mirecki Millunchick*[1]; Alexandru Riposan[1]; Bruce J. Dall[1]; Christopher A. Pearson[2]; Bradford G. Orr[3]; [1]University of Michigan, Matls. Sci. & Engrg., 2030 HH Dow, 2300 Hayward St., Ann Arbor, MI 48109 USA; [2]University of Michigan, Dept. of Compu. Sci., Engrg. Sci. & Physics, Flint, MI 48502 USA; [3]University of Michigan, Applied Physics, The Harrison M. Randall Lab., Ann Arbor, MI 48109 USA

9:20 AM Student
P4, Surfactant Modified Lateral Growth and Surface Morphology of GaAs (001): *Ryan R. Wixom*[1]; Loren W. Rieth[1]; Gerald B. Stringfellow[1]; [1]University of Utah, Matls. Sci. & Engrg., 1495 East 100 S., Rm. 120 Kennecott, Salt Lake City, UT 84112 USA

9:40 AM Student
P5, Experimental Studies and Modeling of Selective Area Growth of InP-Related Alloys by MOCVD: *Sang-Jun Choi*[1]; P. Daniel Dapkus[1]; Kostadin Djordjev[1]; Ryan Stevenson[1]; [1]University of Southern California, Depts. of Matls. Sci. & Electl. Engrg., 3651 USC Watt Way, VHE Rm. #309, University Park, Los Angeles, CA 90089-0243 USA

10:00 AM Break

10:20 AM
P6, Faceting and Lateral Overgrowth on a SiO_2-Masked GaAs Substrate - Dependence on Nanoscale Dimensions: *S. C. Lee*[1]; L. R. Dawson[1]; S. R.J. Brueck[1]; [1]The University of New Mexico, Ctr. for High Tech. Matls., Dept. of Electl. & Compu. Engrg., 1313 Goddard SE, Albuquerque, NM 87106 USA

10:40 AM Student
P7, The Effect of N on Ordering in GaInP: *David Cook Chapman*[1]; Gerald B. Stringfellow[1]; Bong Joong Kim[2]; Tae Yeon Seong[2]; [1]University of Utah, Dept. of Matls. Sci. & Engrg., 122 S. Central Campus Dr., EMRO 304, Salt Lake City, UT 84112 USA; [2]Kwangju Institute of Science and Technology, Dept. of Matls. Sci. & Engrg., Kwangju 500-712 Korea

11:00 AM Student
P8, The Effect of Nitrogen on the Optical and Transport Properties of Ga0.48In0.52NyP1-y Grown on GaAs (001) Substrates: *Y. G. Hong*[1]; A. Nishikawa[1]; C. W. Tu[1]; [1]University of California, San Diego, Dept. of Electl. & Compu. Engrg., 9500 Gilman Dr., La Jolla, CA 92093-0407 USA

11:20 AM
P9, Heteroepitaxial and Homoepitaxial Growth of ZnO{0001} Thin Films via Metalorganic Vapor Phase Epitaxy and their Characterization: *Robert F. Davis*[1]; Tim P. Smith[1]; Harmony McClean[1]; Bunmi T. Adekore[1]; David J. Smith[2]; [1]North Carolina State University, Matls. Sci. & Engrg., Box 7907, Raleigh, NC 27695-7907 USA; [2]Arizona State University, Physics & Astron., Ctr. for Solid State Sci., Box 1704, Tempe, AZ 85287-1704 USA

11:40 AM
P10, Late News

Session Q:
Materials Issues for Organic Optoelectronics and Transistors

Thursday AM
June 26, 2003 **Room: Ballroom West**

Session Chairs: **Tom Jackson, Pennsylvania State University, University Park, PA 16802-2701 USA; David Gundlach, IBM Zurich Research Laboratory, Ruschlikon 8803 Switzerland**

8:20 AM
Q1, Organic Light Emitting Diodes with Laminated Electrodes: *Tae-Woo Lee*[1]; [1]Lucent Technologies, Bell Labs., Murray Hill, NJ 07974 USA

8:40 AM
Q2, Combinatorial Methods for Investigating the Effect of Layer Thickness and Doping on the Performance of Red Organic Light-Emitting Devices: *David J. Gundlach*[1]; Tilman Beierlein[1]; Heike Riel[1]; Siegfried Karg[1]; Walter Riess[1]; [1]IBM Research, Zurich Rsch. Lab., Saumerstrasse 4, Ruschlikon 8803 Switzerland

9:00 AM
Q3, Efficient, Fast Response and Color-Tunable Polymer Light-Emitting Devices: *Cheng Huang*[1]; Chun Yin[2]; Chang-Zheng Yang[2]; Wei Huang[3]; E. T. Kang[3]; [1]The Pennsylvania State University, Dept. of Electl. Engrg. & Matls. Rsch. Inst., 187 Matls. Rsch. Lab., University Park, PA 16802 USA; [2]Nanjing University, Dept. of Polymer Sci. & Engrg., Nanjing 210093 China; [3]National University of Singapore, Inst. of Matls. Rsch. & Engrg. & Dept. of Chem. Engrg. 117602 Singapore

9:20 AM
Q4, Hall Effect Measurement of Low Mobility Organic Semiconductors: *Jeffery Robert Lindemuth*[1]; Qingye Zhou[2]; Karen Mulfor[2]; Jae Ryu[2]; [1]Lakeshore Cryotonics, 575 McCorkel Blvd., Westerville, OH 43021 USA; [2]Elecon Inc., 200 Turnpike Rd., Chelmsford, MA 01824 USA

9:40 AM
Q5, Bias-Stress Effects in Polythiophene and Polyfluorene Thin-Film Transistors: *Alberto Salleo*[1]; Robert A. Street[1]; Michael L. Chabinyc[1]; Kateri E. Paul[1]; William S. Wong[1]; Raj B. Apte[1]; Beng S. Ong[2]; Yiliang Wu[2]; [1]Palo Alto Research Center, 3333 Coyote Hill Rd., Palo Alto, CA 94304 USA; [2]Xerox Research Centre of Canada, Mississauga, Ontario Canada

10:00 AM Break

10:20 AM Invited
Q6, Pentacene Thin Film Transistors: From Film Growth to Applications in Sensors: *George Malliaras*[1]; [1]Cornell University, Matls. Sci., 327 Bard Hall, Ithaca, NY 14853-1501 USA

11:00 AM
Q7, Shadow Mask Patterned Pentacene Based Transponder Circuitry: *Paul F. Baude*[1]; David Ender[1]; Chris Gerlach[1]; Tommie Wilson Kelley[1]; Michael Haase[1]; Steve Theiss[1]; Tzu Chen Lee[1]; Dennis Vogel[1]; [1]3M, EITC, 201-1N-35, St. Paul, MN 55144 USA

11:20 AM Student
Q8, Stability of Pentacene Based Thin Film Transistors in an Acidic Ambient: *Karthik Shankar*[1]; Jonathan Andrew Nichols[1]; Thomas Nelson Jackson[1]; [1]The Pennsylvania State University, The Dept. of Electl. Engrg., Ctr. for Thin Film Devices, 121 Electl. Engrg. E., University Park, PA 16802 USA

Session R: Nanoscale Fabrication and Self Assembled Systems

Thursday AM
June 26, 2003 **Room: Theatre**

Session Chairs: **Paul Berger, The Ohio State University, Dept. of Electl. Engrg., Columbus, OH 43210-1272 USA; Supriyo Bandyopadhyay, Virginia Commonwealth University, Dept. of Electl. Engrg., Richmond, VA 23284 USA**

8:20 AM
R1, The Growth of GaAsN Islands on InP: *Päivi Pohjola*[1]; Teppo Hakkarainen[1]; Markku Sopanen[1]; Harri Lipsanen[1]; [1]Helsinki University of Technology, Optoelect. Lab., PO Box 3500, HUT 02015 Finland

8:40 AM
R2, Ordered Arrays of InGaAs Nanostructures by Selective Area Growth or Modulated Self-Assembly Using Block Copolymer Lithography: *R. R. Li*[1]; P. D. Dapkus[1]; Zoonhoon Lee[2]; S. R. Nutt[2]; M. A. Quinlan[3]; B. E. Koel[3]; M. E. Thompson[3]; C. K. Harrison[4]; P. M. Chaikin[5]; R. A. Register[6]; D. H. Adamson[7]; [1]University of Southern California, Matls. Sci. Dept., 3651 USC Wattway, VHE 309, Los Angeles, CA 90089 USA; [2]University of Southern California, Matls. Sci., 3651 USC Wattway, VHE 416, Los Angeles, CA 90089 USA; [3]University of Southern California, Chmst. Dept., Los Angeles, CA 90089 USA; [4]National Institute of Standard and Technology, Polymer Div., Gaithersburg, MD 20899 USA; [6]Princeton University, Chem. Engrg. Dept., Princeton, NJ 08544 USA; [7]Princeton Materials Institute, Princeton, NJ 08544 USA

9:00 AM
R3, Well-Aligned Zinc Oxide Nanodots Array on Patterned Substrates: *Shizuo Fujita*[1]; Sang-Woo Kim[2]; Masaya Ueda[2]; Teruhisa Kotani[2]; Shigeo Fujita[2]; [1]Kyoto University, Internatl. Innovation Ctr., Yoshida-Honmachi, Sakyo, Kyoto 606-8501 Japan; [2]Kyoto University, Dept. Elect. Sci. & Engrg., Yoshida-Honmachi, Sakyo, Kyoto 606-8501 Japan

9:20 AM
R4, Ultra-High Dense InGaAsN:Sb/GaAs Quantum Dot Arrays Fabricated Non-Lithographically for Long-Wavelength Optical Devices: N. Kouklin[1]; J. Liang[1]; H. Chik[1]; M. Tzolov[1]; *J. M. Xu*[1]; J. B. Heroux[2]; W. I. Wang[2]; [1]Brown University, Div. of Engrg., Box D, Providence, RI 02912 USA; [2]Columbia University, Dept. of Electl. Engrg., New York, NY 10027 USA

9:40 AM
R5, Biomolecular Nanomotor Motility in SU-8 Microchannels: *Lili Jia*[1]; Samira G. Moorjani[2]; Chung-Chen S. Kuo[1]; Thomas N. Jackson[1]; William O. Hancock[2]; [1]Pennsylvania State University, Electl. Engrg., 121 EE East, University Park, PA 16802 USA; [2]Pennsylvania State University, Bioengrg., 218 Hallowell Bldg., University Park, PA 16802 USA

10:00 AM Break

10:20 AM
R6, Lateral Nanogaps by Vertical Processing: *Karthik Shankar*[1]; Christopher Vincent Baiocco[2]; Thomas N. Jackson[1]; [1]The Pennsylvania State University, The Dept. of Electl. Engrg., Ctr. for Thin Film Devices, 121 Electl. Engrg. E., University Park, PA 16802 USA; [2]IBM, Microelect., Hopewell Junction, NY 12533 USA

10:40 AM
R7, 30-nm Period Gratings in Hydrogen Silsesquioxane Resist Fabricated by Electron-Beam Lithography: *Michael J. Word*[1]; Ilesanmi Adesida[1]; Paul R. Berger[2]; [1]University of Illinois at Urbana-Champaign, Dept. of Electl. & Compu. Engrg., 319 Micro & Nanotech. Lab., 208 N. Wright St., Urbana, IL 61801 USA; [2]The Ohio State University, Dept. of Electl. Engrg., 205 Dreese Lab., 2015 Neil Ave., Columbus, OH 43210 USA

11:00 AM
R8, Pulsed Laser Annealing of Self-Organized InAs/GaAs Quantum Dots: *Subhananda Chakrabarti*[1]; Kaveh Moazzami[1]; Sasan Fathpour[1]; Pallab Bhattacharya[1]; Jamie D. Phillips[1]; Yuanyuan Lei[2]; Nigel Browning[2]; [1]University of Michigan, EECS, 1301 Beal Ave., Ann Arbor, MI 48109 USA; [2]University of Illinois, Physics, Chicago, IL 60607-7059 USA

11:20 AM
R9, A Systematic Study of SiGe Quantum Fortresses and Possible Applications to Quantum Cellular Automata: *Thomas E. Vanderveldе*[1]; Piyush Kumar[2]; Takeshi Kobayashi[2]; Jennifer L. Gray[3]; Timothy L. Pernell[2]; Robert Hull[3]; John C. Bean[2]; [1]University of Virginia, Dept. of Physics, 382 McCormick Rd., Charlottesville, VA 22904 USA; [2]University of Virginia, Electl. & Compu. Engrg. Dept., 351 McCormick Rd., Charlottesville, VA 22904 USA; [3]University of Virginia, Matl. Sci. Dept., 116 Engineers Way, Charlottesville, VA 22904 USA

11:40 AM
R10, Morphological Evolution of $Si_{1-x}Ge_x$ Films Grown on Intentionally Pitted Si(100) Surfaces Using Molecular Beam Epitaxy: Qingfang Yao[1]; *Douglas Swenson*[1]; [1]Michigan Technological University, Dept. of Matls. Sci. & Engrg., 1400 Townsend Dr., Houghton, MI 49931 USA

Session S: High-K Dielectrics - I

Thursday AM
June 26, 2003 **Room: Saltair**

Session Chairs: **Patrick Lenahan, Pennsylvania State University, University Park, PA 16802 USA; Susanne Stemmer, University of California, Matls. Dept., Santa Barbara, CA 93106-5050 USA**

8:20 AM
S1, Atomic Layer Deposition of Metal Oxide High-k Gate Dielectrics for MOSFETs and Carbon Nanotube Transistors: *Paul C. McIntyre*[1]; Hyoungsub Kim[1]; Ali Javey[2]; Baylor B. Triplett[1]; Hongjie Dai[2]; Krishna C. Saraswat[4]; [1]Stanford University, Matls. Sci. & Engrg., Rm. 243, McCullough Bldg., 476 Lomita Mall, Stanford, CA 94305-4045 USA; [2]Stanford University, Chmst., 476 Lomita Mall, Stanford, CA 94305-4045 USA; [4]Stanford, Electl. Engrg., CISX Bldg., Stanford, CA 94305 USA

9:00 AM Student
S2, Charge Trapping in Atomic Layer Deposited Hafnium Oxide on Silicon: *Andrew Y. Kang*[1]; Patrick M. Lenahan[1]; John F. Conley[2]; [1]The Pennsylvania State University, Dept. Engrg. Sci. & Mech., 212 EES Bldg., University Park, PA 16802 USA; [2]Sharp Labs of America, 5700 NW Pacific Rim Blvd., Camas, WA 98607 USA

9:20 AM Student
S3, Integration and Electrical Performance of Aluminum Oxide Thin Films Deposited by Low Temperature Metal Organic Chemical Vapor Deposition (MOCVD) for CMOS Gate Dielectric Applications: *Spyridon Skordas*[1]; Filippos Papadatos[1]; Steven Consiglio[1]; Eric T. Eisenbraun[1]; Alain E. Kaloyeros[1]; [1]The University at Albany-SUNY, Sch. of NanoScis. & NanoEngrg., 251 Fuller Rd., CESTM Bldg., Albany, NY 12203 USA

9:40 AM
S4, Experimental and Theoretical Analysis of HfO_2 Thin Film Growth by MOCVD: A. N. Vorob'ev[1]; I. Yu. Archakov[1]; O. V. Bord[1]; *Yu. N. Makarov*[1]; M. Reinhold[2]; M. Schumacher[2]; M. Heuken[2]; [1]STR GmbH, PO Box 1207, Erlangen D-91002 Germany; [2]AIXTRON AG, Kackertstr. 15-17, Aachen D-52072 Germany

10:00 AM Break

10:20 AM Student
S5, UV-Ozone Oxidized High-k Dielectrics on Si and Ge Substrates: *David Chi*[1]; Chi On Chui[2]; Shriram Ramanathan[1]; Baylor B. Triplett[1]; Krishna Saraswat[2]; Paul C. McIntyre[1]; [1]Stanford University, Matls. Sci. & Engrg., 476 Lomita Mall, McCullough Bldg., Stanford, CA 94305 USA; [2]Stanford University, Electl. Engrg., Ctr. for Integrated Sys., Stanford, CA 94305 USA

10:40 AM
S6, Modeling of the Accumulation Capacitance in the Case of High-K Gate Dielectrics: *Samares Kar*[1]; [1]Indian Institute of Technology, Dept. of Electl. Engrg., Kanpur, Uttar Pradesh 208016 India

11:00 AM Student
S7, Development of Hybrid TiAlOx Layer as a Novel High-k Gate Oxide: Wei Fan[1]; Sanjib Saha[1]; John A. Carlisle[1]; R. P.H. Chang[2]; *Orlando Auciello*[1]; [1]Argonne National Laboratory, Matls. Sci., 9700 S. Cass Ave., Argonne, IL 60439 USA; [2]Northwestern University, Matls. Sci. & Engrg., 2220 N. Campus Dr., Evanston, IL 60208 USA

11:20 AM Student
S8, Improved Electrical Properties of SONOS-Type Flash Memory Using High-k Dielectric as Charge Trapping Layer and Blocking Layer: *Sangmoo Choi*[1]; Hyunsang Hwang[1]; Myungjun Cho[1]; [1]Kwangju Institute of Science & Engineering, Dept. of Matls. Sci., 1 Oryong, Puk-Gu, Kwangju 500-712 Korea

11:40 AM
S9, Aluminum Oxide Layers as Potential Components for Crested Tunnel Barriers: *Elena Cimpoiasu*[1]; S. K. Tolpygo[1]; X. Liu[1]; N. Simonian[1]; Yu. A. Polyakov[1]; J. E. Lukens[1]; K. K. Likharev[1]; [1]SUNY Stony Brook, Physics & Astron., Stony Brook, NY 11794 USA

Session T: Contacts to Group III Nitrides

Thursday AM
June 26, 2003 **Room: Panorama East**

Session Chairs: **Suzanne Mohney, Pennsylvania State University, Dept. of Matls. Sci. & Engrg., University Park, PA 16802 USA; Timothy Sands, Purdue University Sch. of Matl. Engrg., W. Lafayette, IN 47906 USA**

8:20 AM Student
T1, Formation of Low Resistance and Transparent Ohmic Contacts to p-Type GaN using Transparent Conducting Oxides: *June O. Song*[1]; Kyoung-Kook Kim[1]; Tae-Yeon Seong[1]; [1]Kwangju Institute of Science & Technology, Dept. of Matls. Sci. & Eng., 1 Oryong-dong, Puk-gu, Gwangju 500-712 Korea

8:40 AM
T2, Effects of Oxidation of Ni/Pt and Ni/Pt/Au p-Contacts on Performance of InGaN/GaN Multiple-Quantum Well Light-Emitting Diodes: *Chul Huh*[1]; William J. Schaff[1]; Lester F. Eastman[1]; Seong-Ju Park[2]; [1]Cornell University, Dept. of Electl. & Compu. Engrg., Ithaca, NY 14853 USA; [2]Kwangju Institute of Science and Technology, Dept. of Matls. Sci. & Engrg., Kwangju 500-712 Korea

9:00 AM Student
T3, Surface Treatment of n-GaN for Ohmic Contact Formation: *Deepak Selvanathan*[1]; Vipan Kumar[1]; Ilesanmi Adesida[1]; [1]University of Illinois, Micro & Nanotech. Lab., 319 MNTL, 208 N. Wright St., Urbana, IL 61801 USA

9:20 AM Student
T4, The Study of n-Ohmic Contact in III-Nitride Semiconductor for High Temperature Applications with the Use of W and WSi: *Ben Luo*[1]; Brent Gila[2]; Cammy Abernathy[2]; Fan Ren[1]; Stephen Pearton[2]; A. G. Baca[3]; R. D. Briggs[3]; D. Gotthold[4]; R. Birkhahn[4]; B. Peres[4]; [1]University of Florida, Chem. Engrg., Gainesville, FL 32611 USA; [2]University of Florida, Dept. of Matls. Sci. & Engrg., Gainesville, FL 32611 USA; [3]Sandia National Laboratories, Albuquerque, NM 87185 USA; [4]EMCORE, Somerset, NJ 08873 USA

9:40 AM
T5, Optimization of AlGaN/GaN HEMT Sunken Ohmic Contacts: Haiting Wang[1]; Lip Khoon Li[1]; Leng Seow Tan[1]; Eng Fong Chor[1]; [1]National University of Singapore, Electl. & Compu. Engrg., Ctr. for Optoelect. 117576 Singapore

10:00 AM Break

10:20 AM Student
T6, Compositional Shift of III-Nitride Alloy Semiconductors Induced by Reaction with Metallic Thin Films: *Brett A. Hull*[1]; Suzanne E. Mohney[2]; Uttiya Chowdhury[3]; Russell D. Dupuis[4]; Hai Lu[5]; William J. Schaff[6]; [1]The Pennsylvania State University, Matls. Sci. & Engrg., 206A Steidle Bldg., University Park, PA 16802 USA; [2]The Pennsylvania State University, Matls. Sci. & Engrg., 109 Steidle Bldg., University Park, PA 16802 USA; [3]The University of Texas at Austin, Electl. & Compu. Engrg., Austin, TX 78758 USA; [4]The University of Texas at Austin, Electl. & Compu. Engrg., 10100 Burnet Rd., Bldg. 160, PRC-MER-R9900, Austin, TX 78758 USA; [5]Cornell University, Electl. & Compu. Engrg., Ithaca, NY 14853 USA; [6]Cornell University, Electl. & Compu. Engrg., 415 Phillips Hall, Ithica, NY 14853 USA

10:40 AM
T7, Improvement of Schottky Characteristics by Insertion of Refractory Metal into Ni/Au Electrodes on n-(Al)GaN with Thermal Annealing: *Naruhisa Miura*[1]; Takuma Nanjo[1]; Muneyoshi Suita[1]; Toshiyuki Oishi[1]; Yuji Abe[1]; Tatsuo Ozeki[1]; Hiroyasu Ishikawa[2]; Takashi Egawa[2]; Takashi Jimbo[2]; [1]Mitsubishi Electric Corporation, Advd. Tech. R&D Ctr., 8-1-1, Tsukaguchi-Honmachi, Amagasaki, Hyogo 661-8661 Japan; [2]Nagoya Institute of Technology, Rsch. Ctr. for Micro-Struct. Devices, Gokiso, Showa, Nagoya 466-8555 Japan

11:00 AM Student
T8, High Temperature GaN Based Schottky Diode Gas Sensors: *Jihyun Kim*[1]; B. P. Gila[2]; C. R. Abernathy[2]; S. J. Pearton[2]; A. G. Baca[3]; R. D. Briggs[3]; G. Y. Chung[4]; F. Ren[1]; [1]University of Florida, Chem. Engrg., Chem. Engrg. Bldg., Gainesville, FL 32611 USA; [2]University of Florida, Matls. Sci. & Engrg., Gainesville, FL 32611 USA; [3]Sandia National Laboratories, Albuquerque, NM 87185 USA; [4]Sterling Semiconductor, Tampa, FL 33619 USA

11:20 AM
T9, Study of Schottky Contacts on Strained AlGaN/GaN Heterostructures: *Zhaojun Lin*[1]; George R. Brandes[2]; Wu Lu[1]; [1]The Ohio State University, Dept. of Electl. Engrg., 205 Dreese Lab., 2015 Neil Ave., Columbus, OH 43210 USA; [2]ATMI, Danbury, CT 06810 USA

11:40 AM
T10, Late News

Session U: SiC: Growth and Characterization

Thursday AM
June 26, 2003 **Room: Auditorium**

Session Chairs: **Laura Rea, US Air Force Research Laboratory, WL/MLPO, Wright Patterson AFB, OH 45433-7707 USA; Michael Capano, Purdue University, Sch. of Electl. & Compu. Engrg., W. Lafayette, IN 47907-1285 USA**

8:20 AM Student
U1, Electro-Chemical-Mechanical Polishing of Silicon Carbide: *Canhua Li*[1]; Ishwara Bhat[1]; Rongjun Wang[1]; Joseph Seiler[1]; [1]Rensselaer Polytechnic Institute, ECSE Dept., 110 8th St., Troy, NY 12065 USA

8:40 AM
U2, Large Diameter High Purity Semi-Insulating 4H-SiC Substrates for Microwave Device Applications: *D. P. Malta*[1]; J. R. Jenny[1]; M. F. Brady[1]; St. G. Müller[1]; A. R. Powell[1]; V. F. Tsvetkov[1]; H. McD. Hobgood[1]; R. C. Glass[1]; C. H. Carter[1]; [1]Cree, Inc., 4600 Silicon Dr., Durham, NC 27703 USA

9:00 AM
U3, Electrical Characteristics of 4H-SiC Epitaxial Layers Grown by Chemical Vapor Deposition on Porous SiC Substrates: *Zhaoqiang Fang*[1]; David C. Look[1]; Ramya Chandrasekaran[2]; Shailaja Rao[2]; Stephen E. Saddow[2]; [1]Wright State University, Semiconductor Rsch. Ctr., 3640 Colonel Glenn Hwy., 248 Fawcett Hall, Dayton, OH 45435 USA; [2]University of South Florida, Electl. Engrg. Dept., 4204 E. Fowler Ave., ENB 118, Tampa, FL 33620 USA

9:20 AM Student
U4, Studies of Pore Morphology Modification in Porous SiC during High-Temperature Processing: *Jie Bai*[1]; Michael Dudley[1]; Pelagia-Irene Gouma[1]; Marina Mynbaeva[2]; [1]Stony Brook University, Matls. Sci. & Engrg., Stony Brook, NY 11794-2275 USA; [2]Ioffe Physico-Technical Institute, St. Petersburg 194021 Russia

9:40 AM
U5, Study of Bulk Wet Etching and Optical Properties of Porous 6H-SiC: *Tim K. Hossain*[1]; Tilghman L. Rittenhouse[2]; Paul W. Bohn[2]; Marcus Alfred[3]; James Lindesay[3]; Ilesanmi Adesida[1]; [1]UIUC, ECE, 208 N. Wright St., Urbana, IL 61801 USA; [2]UIUC, Chmst. Dept., Urbana, IL 61801 USA; [3]Howard University, Physics Dept., 2355 Sixth St. NW, Washington, DC 20059 USA

10:00 AM Break

10:20 AM
U6, Growth and Characterization of Intentionally Al Doped 3C-SiC on Step Free 4H-SiC and 6H-SiC Mesa Substrates: *Andrew J. Trunek*[1]; David J. Spry[1]; Phillip G. Neudeck[2]; J. A. Powell[3]; [1]Ohio Aerospace Institute, 5510(OAI), 21000 Brookpark Rd., MS77-1, Cleveland, OH 44135 USA; [2]NASA GRC, 5510, 21000 Brookpark Rd., MS77-1, Cleveland, OH 44135 USA; [3]Sest, 21000 Brookpark Rd., MS77-1, OH USA

10:40 AM
U7, Surface Characterization of 3C-SiC Mesa Heterofilms: Evidence for Growth by Edge/Corner Nucleation Mechanism: *Philip G. Neudeck*[1]; Andrew J. Trunek[2]; J. Anthony Powell[3]; David J. Spry[2]; [1]NASA Glenn Research Center, 21000 Brookpark Rd., MS 77-1, Cleveland, OH 44135 USA; [2]OAI, 21000 Brookpark Rd., MS 77-1, Cleveland, OH 44135 USA; [3]Sest, Inc., 21000 Brookpark Rd., MS 77-1, Cleveland, OH 44135 USA

11:00 AM
U8, Hot-Wall CVD Epi-Growth of 4H-SiC using PVT Buffer Layer: *Ying Gao*[1]; Zehong Zhang[2]; Xianyun Ma[2]; Yuri Khlebnikov[1]; Tangali Sudarshan[2]; [1]Bandgap Technologies, Inc., 1428 Taylor St., Columbia, SC 29201 USA; [2]University of South Carolina, Dept. of Electl. Engrg., Columbia, SC 29208 USA

11:20 AM Student
U9, Experimental Investigation and Simulation of Si-Droplets Formation during SiC CVD Epitaxial Growth and Implant Annealing Processes: *Yingquan Song*[1]; Galyna Melnychuk[1]; Yaroslav Koshka[1]; Michael S. Mazzola[1]; Jeffery L. Wyatt[1]; Hrishikesh Das[1]; Charles U. Pittman[2]; [1]Mississippi State University, Dept. of Electl. & Compu. Engrg., Box 9571, Mississippi State, MS 39762 USA; [2]Mississippi State University, Dept. of Chmst.., Box 9573, Mississippi State, MS 39762 USA

11:40 AM
U10, Late News

Session V:
UV and Visible Nitride Emitters

Thursday PM
June 26, 2003 **Room: Ballroom Center**

Session Chairs: **Russell Dupuis, University of Texas, Microelect. Rsch. Ctr., Austin, TX 78712-1100 USA; Andrew Allerman, Sandia National Laboratories, Albuquerque, NM 87185 USA**

1:30 PM
V1, Ternary AlGaN-Based LEDs Emitting at 292 nm: *Ting Gang Zhu*[1]; Uttiya Chowdhury[1]; Michael M. Wong[1]; Dongwon Yoo[1]; Russell D. Dupuis[1]; [1]The University of Texas at Austin, Microelect. Rsch. Ctr., 10100 Burnet Rd., Bldg. 160, Austin, TX 78758 USA

1:50 PM
V2, Deep Ultra Violet Light Emitting Diodes Based on Short Period Superlattices of AlN/AlGaN: *Sergey A. Nikishin*[1]; Vladimir V. Kuryatkov[1]; Boris A. Borisov[1]; Gela D. Kipshidze[1]; Anilkumar Chandolu[1]; Mark Holtz[2]; Henryk Temkin[1]; [1]Texas Tech University, Nano Tech Ctr./ Dept. of Electl. & Compu. Engrg., Box 43102, Lubbock, TX 79409 USA; [2]Texas Tech University, Nano Tech Ctr./ Dept. of Physics, Lubbock, TX 79409 USA

2:10 PM
V3, OMVPE Growth and Characterization of AlGaN for Ultraviolet Optoelectronics: *Maria Gherasimova*[1]; X.-L. Wang[1]; G. Cui[1]; J. Su[1]; J. Han[1]; E. Makarona[2]; H. Peng[2]; Y. He[2]; Y.-K. Song[2]; A. V. Nurmikko[2]; [1]Yale University, Dept. of Electl. Engrg., PO Box 208284, New Haven, CT 06520 USA; [2]Brown University, Div. of Engrg., 182 Hope St., Providence, RI 02912 USA

2:30 PM
V4, Growth of High Quality AlGaN Layers on Single Crystal Bulk AlN Substrates: *Qhalid Fareed*[1]; Rakesh Jain[1]; Remis Gaska[1]; Edmundas Kuokstis[2]; Jin Wei Yang[2]; M. Asif Khan[2]; Gintautas Tamulaitis[3]; Ibrahim Yilmaz[3]; Michael Shur[3]; Leo Schowalter[4]; [1]Sensor Electronic Technology, 1195 Atlas Rd., Columbia, SC 29223 USA; [2]University of South Carolina, Dept. of Electl. Engrg., 301 S. Main St., Columbia, SC 29208 USA; [3]Rensselaer Polytechnic Institute, Dept. of ECSE, Troy, NY 12180 USA; [4]Crystal IS Inc., Latham, NY 12110 USA

2:50 PM Break

3:10 PM
V5, High Optical Quality InGaN/GaN Multiple Quantum Disks on GaN Nano-Columns Grown by rf-Plasma Assisted Molecular Beam Epitaxy: *Akihiko Kikuchi*[1]; Katsumi Kishino[1]; [1]Sophia University, Electl. & Elect. Engrg., 7-1, Kioi-cho, Chiyoda-ku, Tokyo 102-8554 Japan

3:30 PM
V6, Mg Fluctuation in p-GaN Layers and its Effects on InGaN/GaN Blue Light-Emitting Diodes Dependent on p-GaN Growth Temperature: *Chi Sun Kim*[1]; *Hyun Kyong Cho*[1]; *Min Ki Yoo*[1]; *Chang-Hee Hong*[1]; [1]Chonbuk National University, Semiconductor Physics Rsch. Ctr./ Dept. of Semiconductor Sci. & Tech., 664-14 Duckjin-Dong, Duckjin-Gu, Chonju, Chollabuk-Do 561-756 S. Korea

3:50 PM
V7, Mg Doping of AlGaN and GaN Epitaxial Layers Grown by MOVPE: *Chak-wah Tang*[1]; Tingjie Chen[1]; Lisheng Yu[1]; Yugang Zhou[1]; Kei May Lau[1]; [1]Hong Kong University of Science & Technology, EEE Dept., Clear Water Bay, Kowloon Hong Kong

4:10 PM
V8, InGaN/GaN Blue LEDs Fabricated on <11-20> Patterned Sapphire Substrates: *Tzu-Chi Wen*[1]; S. J. Chang[1]; Y. K. Su[1]; C. S. Chang[1]; Y. C. Lin[1]; S. C. Shei[2]; [1]National Cheng Kung University, Inst. of Microelect. & Dept. of Electl. Engrg., 1 University Rd., Tainan 70101 Taiwan; [2]South Epitaxy Corporation, No. 16 Da Shuen 9th Rd., Tainan Sci.-Based Industl. Park, Hsin-Shi 741 Tainan County

4:30 PM
V9, Nitride-Based LEDs with Si-Doped In0.23Ga0.77N/GaN Short-Period Superlattice Tunneling Contact Layer: *Tzu-Chi Wen*[1]; W. C. Lai[1]; S. J. Chang[1]; Y. K. Su[1]; L. W. Wu[1]; J. K. Sheu[1]; J. M. Tsai[2]; [1]National Cheng Kung University, Inst. of Microelect., Dept. of Electl. Engrg., 1 DaSheu Rd., Tainan 701 Taiwan; [2]South Epitaxy Corporation

Session W:
Epitaxy II: Metamorphic Growth and Integration

Thursday PM
June 26, 2003 **Room: Ballroom East**

Session Chairs: **Archie Holmes, University of Texas, Austin, TX 78758-4445 USA; Kei-Mai Lau, Hong Kong University of Science & Technology, Dept. of Electl. & Elect. Engrg., Clear Water Bay, Kowloon Hong Kong**

1:30 PM Student
W1, Lower Surface Defect Densities and Improved Electrical Properties if InAs Epilayers Grown on GaP Substrates: *Aristo Yulius*[1]; [1]Yale University, Dept. of Electl. Engrg., New Haven, CT 06520 USA

1:50 PM Student
W2, Metamorphic InAs Bipolar Junction Transistors on GaAs and InP Grown by Molecular Beam Epitaxy: *Xiaohua Wu*[1]; Kent L. Averret[2]; Mike W. Koch[3]; Gary W. Wicks[3]; [1]University of Rochester, Dept. of Physics & Astron., Rochester, NY 14627 USA; [2]Air Force Research

Laboratory, Wright Patterson AFB, OH 45433 USA; [3]University of Rochester, The Inst. of Optics, Rochester, NY 14627 USA

2:10 PM Student
W3, 2 Micron Emission from InAs Quantum Dashes Grown on a GaAs Substrate Using AlGaAsSb Metamorphic Buffers: *Ganesh Balakrishnan*[1]; Thomas J. Rotter[1]; Andreas Stintz[1]; L. R. Dawson[1]; Kevin J. Malloy[1]; D. L. Huffaker[1]; [1]University of New Mexico, CHTM, 1313 Goddard SE, Albuquerque, NM 87106 USA

2:30 PM Student
W4, "Arsenic Free" Infrared Photovoltaic Detectors with Metamorphic InAlSb Digital Alloy Buffer Layers: *Elena A. Plis*[1]; Paul Rotella[1]; Sunil Raghavan[1]; L. R. Dawson[1]; Sanjay Krishna[1]; D. Le[2]; C. P. Morath[2]; [1]University of New Mexico, Ctr. for High Tech. Matls., 1313 Goddard NE, Albuquerque, NM 87106 USA; [2]Kirtland Air Force Base, Air Force Rsch. Lab. (AFRL/VSSS), 3550 Aberdeen Ave. SE, Bldg. 426, NM 87117 USA

2:50 PM Student
W5, Carrier Recombination in Metamorphic InAsP/InGaAs Double Heterostructure Grown on Off-Cut and On-Axis InP Substrates: *Yong Lin*[1]; Mantu K. Hudait[1]; Steven W. Johnston[2]; Steven A. Ringel[1]; [1]The Ohio State University, Electl. Engrg., 205 Dreese Lab., 2015 Neil Ave., Columbus, OH 43210 USA; [2]National Renewable Energy Laboratory, Golden, CO 80401 USA

3:10 PM Break

3:30 PM Student
W6, Segmented Growth Optimization and Chemical-Mechanical Polishing of InAlAs Graded Buffer Layers for InAs-Based Device Structures: *Atif M. Noori*[1]; Randy S. Sandhu[1]; Sumiko L. Hayashi[1]; Erik D. Meserole[1]; Abdullah Cavus[2]; Cedric Monier[2]; Randy Hsing[2]; Donald Sawdai[2]; Mike Wojtowicz[2]; Tom R. Block[2]; Augusto Gutierrez-Aitken[2]; Mark S. Goorsky[1]; [1]University of California, Los Angeles, Matls. Sci. & Engrg., Sch. of Engrg. & Appl. Sci., 2521 Boelter Hall, Los Angeles, CA 90095-1595 USA; [2]Northrop Grumman Space Technology, One Space Park, Redondo Beach, CA 90278 USA

3:50 PM Student
W7, Correlation of Minority Carrier Electron and Hole Lifetimes and the Reverse Saturation Current Density in GaAs Diodes Grown on Ge/SiGe/Si Substrates: *Carrie L. Andre*[1]; Maria Gonzalez[1]; Dave M. Wilt[2]; Eric B. Clark[2]; Arthur J. Pitera[3]; Minjoo L. Lee[3]; Eugene A. Fitzgerald[3]; Mark Carroll[4]; Matthew Erdtmann[4]; John A. Carlin[4]; Brian M. Keyes[5]; Steven A. Ringel[1]; [1]The Ohio State University, Dept. of Electl. Engrg., 205 Dreese Lab, 2015 Neil Ave., Columbus, OH 43210 USA; [2]NASA Glenn Research Center at Lewis Field, Photovoltaic & Space Environ. Branch, MS 302-1, 21000 Brookpark Rd., Cleveland, OH 44135 USA; [3]Massachusetts Institute of Technology, Dept. of Matls. Sci. & Engrg., 60 Vassar St., Cambridge, MA 02139 USA; [4]AmberWave Systems, 13 Garabedian Dr., Salem, NH 03079 USA; [5]National Renewable Energy Laboratory, MS-3215, 1617 Cole Blvd., Golden, CO 80401 USA

4:10 PM Student
W8, Low Temperature MBE-Grown GaAs on Silicon Substrates for Ultra-Fast Photoconductive Switches Application: *Kai Ma*[1]; Ryohei Urata[1]; James S. Harris[1]; David A.B. Miller[1]; [1]Stanford University, Solid State & Photonics Lab., CIS Bldg., Rm.126X, Via Ortega, Stanford, CA 94305 USA

4:30 PM
W9, Ge Overgrowth of Oxidized and Reduced Ge/Si Islands: *Vilma Zela*[1]; Anders Gustafsson[1]; Werner Seifert[1]; [1]Lund University, Solid State Physics, Box 118, S- 22100, Lund Sweden

4:50 PM
W10, Quantification of Substitutional Carbon and Oxygen's Affect on the Electron Minority Carrier Lifetime in Pseudomorphically Strained SiGeC: *Malcolm S. Carroll*[1]; Clifford King[2]; [1]Agere Systems, 217 Prospect Ave., 14-3B, Cranford, NJ 07016 USA; [2]Noble Device Technologies, New York, NY 10013 USA

Session X: Narrow Bandgap Antimonides and Arsenides

Thursday PM
June 26, 2003 **Room: Ballroom West**

Session Chairs: **Ralph Dawson, The University of New Mexico, Ctr. for High Tech. Matls., Albuquerque, NM 87106 USA; Robert Biefeld, Sandia National Laboratories, Albuquerque, NM 87185-0601 USA**

1:30 PM
X1, Correlation of Growth Conditions with Photoluminescence and Lasing Properties of Mid-IR Antimonide Type-II "W" Structures: *Chadwick L. Canedy*[1]; William W. Bewley[1]; Chul Soo Kim[1]; Mijin Kim[1]; Igor Vurgaftman[1]; Jerry R. Meyer[1]; [1]Naval Research Laboratory, Code 5613, 4555 Overlook Ave. SW, Washington, DC 20375 USA

1:50 PM Student
X2, Interrelationships in the Electronic and Structural Characteristics of AlGaAsSb-InAs HEMT Structures: *Gregory Edward Triplett*[1]; April S. Brown[2]; Gary S. May[1]; [1]Georgia Institute of Technology, Electl. & Compu. Engrg., 791 Atlantic Dr., NW, Atlanta, GA 30332-0269 USA; [2]Duke University, Dept. of Electl. & Compu. Engrg., 128 Hudson Hall, Box 90291, Durham, NC 27709 USA

2:10 PM Student
X3, Interdiffusion Studies of Al and Ga in AlSb/GaSb Quantum Wells: *M. Gonzalez Debs*[1]; J. G. Cederberg[2]; R. M. Biefeld[2]; T. F. Kuech[1]; [1]University of Wisconsin, Madison, Dept. of Chem. Engrg., Madison, WI 53706 USA; [2]Sandia National Laboratories, Albuquerque, NM 87185-0601 USA

2:30 PM
X4, Control of As Cross-Contamination in InAs/GaSb Superlattice IR Detectors: *Eric M. Jackson*[1]; Georo Boishin[2]; Ed H. Aifer[3]; Brian R. Bennett[3]; Lloyd J. Whitman[3]; [1]SFA, 9315 Largo Dr. W., Largo, MD 20774 USA; [2]Nova Research, Inc., Alexandria, VA 22308 USA; [3]Naval Research Laboratory, Washington, DC 20375 USA

2:50 PM Student
X5, Microstructure of Lateral Epitaxially Overgrown InAs Thin Films: *G. Suryanarayanan*[1]; A. A. Khandekar[2]; T. F. Kuech[3]; S. E. Babcock[4]; [1]University of Wisconsin, Madison, Matls. Sci. Prog., 1509 University Ave., #201A MSE Bldg., Madison, WI 53706 USA; [2]University of Wisconsin, Madison, Dept. of Chem. Engrg., 1415 Engrg. Dr., 2014 Engrg. Hall, Madison, WI 53706 USA; [3]University of Wisconsin, Madison, Dept. of Chem. Engrg. & Matls. Sci. Prog., 1415 Engrg. Dr., 2014 Engrg. Hall, Madison, WI 53706 USA; [4]University of Wisconsin, Madison, Dept. of Matls. Sci. & Engrg. & Matls. Sci. Prog, 1509 University Ave., Madison, WI 53706 USA

3:10 PM Break

3:30 PM
X6, Etch Characteristics of the Group-III Antimonides Using BCl3/Cl2 in Inductively Coupled Plasma (ICP) Dry Etching: *Carlos J. Monroy*[1]; Fred Semendy[1]; Phillip Boyd[1]; Fred Towner[2]; [1]US Army Research Laboratory, Electro Optics & Photonics/IR Matls., 2800 Powder Mill Rd., Adelphi, MD 20783 USA; [2]Maxion Technologies, Inc., 2800 Powder Mill Rd., Adelphi, MD 20783 USA

3:50 PM Student
X7, Characterization of Contact Resistivity on InAs/GaSb Interface: *Yingda Dong*[1]; Dennis W. Scott[1]; Arthur C. Gossard[1]; Mark J.W. Rodwell[1]; [1]University of California, Santa Barbara, Dept. of Electl. & Compu. Engrg., Santa Barbara, CA 93106 USA

4:10 PM
X8, Non-Contact Determination of Free Carrier Concentration in n-GaSb and n-GaInAsSb: *J. E. Maslar*[1]; W. S. Hurst[1]; C. A. Wang[2]; D. A. Shiau[2]; [1]NIST, CSTL, 100 Bureau Dr., Stop 8360, Gaithersburg, MD 20899-8360 USA; [2]Massachusetts Institute of Technology Lincoln Labs, Lexington, MA 02420-9108 USA

4:30 PM Student
X9, A Novel Approach to Enhancing the Polishing Process of InP or GaSb-Based Wafer Substrates for Large-Scale Manufacturing: *Frank F. Shi*[1]; *K. Y. Cheng*[1]; K. C. Hsieh[1]; [1]University of Illinois, Micro & Nanotech. Lab., 208 N. Wright St., Dept. of Electl. Eng., Urbana, IL 61801 USA

Session Y: Molecular Electronics and Nanotubes

Thursday PM
June 26, 2003 **Room: Theatre**

Session Chairs: **David Janes, Purdue University, Dept. of Electl. Engrg., W. Lafayette, IN 47907-1285 USA; Ray Tsui, Motorola Laboratories, Physl. Scis. Rsch. Labs., Tempe, AZ 85284 USA**

1:30 PM
Y1, Realization of "Molecular Enamel Wire" Concept for Molecular Electronics: *Rodion Vladimirovich Belosludov*[1]; Hiroyuki Sato[1]; Amir Abbas Farajian[1]; Hiroshi Mizuseki[1]; Yoshiyuki Kawazoe[1]; [1]Tohoku University, Inst. for Matls. Rsch., Katahira 2-1-1, Aoba-ku, Sendai, Miyagi 980-8577 Japan

1:50 PM Student
Y2, Measuring Electronic Conduction in DNA Attached to Au-Electrodes: *Sugata Bhattacharya*[1]; David B. Janes[1]; Gil Lee[2]; Jaewon Choi[1]; Saurabh Lodha[1]; Alejandro Bonilla[2]; [1]Purdue University, Sch. of Electl. & Compu. Engrg., 465 Northwestern Ave., W. Lafayette, IN 47906 USA; [2]Purdue University, Sch. of Chem. Engrg., 1283 CHME Bldg., W. Lafayette, IN 47906 USA

2:10 PM
Y3, Nature of Electrical Contacts in Au-Octanedithiol-GaAs Diodes: *Julia W.P. Hsu*[1]; David V. Lang[1]; Y. L. Loo[1]; Krishnan Raghavachari[2]; [1]Lucent Technologies, Bell Labs., 600 Mountain Ave., Rm. 1D368, Murray Hill, NJ 07974 USA; [2]Indiana University, Chmst. Dept., Bloomington, IN 47405 USA

2:30 PM
Y4, Metal-Molecules-Metal Devices with Preformed Metal Contact Structures: *Jaewon Choi*[1]; David B. Janes[1]; Saurabh Lodha[1]; Yi Chen[1]; Henny Halimun[1]; Subhasis Ghosh[2]; Scott Burns[3]; Clifford P. Kubiak[3]; [1]Purdue University, Sch. of Electl. & Compu. Engrg., 1285 EE Bldg., W. Lafayette, IN 47907-1285 USA; [2]Jawaharlal Nehru University, Sch. of Physl. Scis., New Delhi 110-067 India; [3]University of California at San Diego, Dept. of Chmst. & Biochmst., San Diego, CA 92121 USA

2:50 PM
Y5, Clocked Molecular Quantum-Dot Cellular Automata: *Craig S. Lent*[1]; Beth Isaksen[1]; Enrique Blair[1]; Marya Lieberman[2]; [1]University of Notre Dame, Electl. Engrg., 275 Fitzpatrick Hall, Notre Dame, IN 46556 USA; [2]University of Notre Dame, Dept. of Chmst. & Biochmst., Notre Dame, IN 46556 USA

Session Z:
High-K Dielectrics - II

Thursday PM
June 26, 2003 **Room: Saltair**

Session Chairs: **Paul McIntyre, Stanford University, Dept. of Matls. Sci. & Engrg., Stanford, CA 94305-2205 USA; G. Lucovsky, North Carolina State University, Physics Dept., Raleigh, NC 27695-8702 USA**

1:30 PM Invited
Z1, Spectroscopic Studies of the Electronic Structure of Transition Metal and Rare Earth High-K Gate Oxides: *G. Lucovsky*[1]; G. B. Rayner[1]; G. Appel[1]; Yu Zhang[1]; J. L. Whitten[2]; J. H. Haen[3]; D. G. Schlom[3]; J. L. Freeouf[4]; R. Uecker[5]; P. Reiche[5]; [1]North Carolina State University, Dept. of Physics, Raleigh, NC 27695-8202 USA; [2]North Carolina State University, Dept. of Chmst., Raleigh, NC 27695 USA; [3]Pennsylvania State University, Dept. of Matls. Sci. & Engrg., University Park, PA 16802 USA; [4]OGI, Dept. of Electl. & Compu. Engrg., Portland, OR 97291 USA; [5]Institute of Crystal Growth, Berlin Germany

2:10 PM
Z2, Characterization of HfO2 Films for High-k Gate Application: *Joseph Kulik*[1]; Ran Liu[1]; N. V. Edwards[1]; S. Zollner[1]; R. Gregory[1]; X. D. Wang[1]; D. Werho[1]; D. Triyoso[2]; [1]Motorola, Inc., Process & Matls. Characterization Lab., 2100 E. Elliot Rd., MD EL622, Tempe, AZ 85284 USA; [2]Motorola, Inc., Advd. Products R&D Lab., 3501 Ed Bluestein Blvd., MD K20, Austin, TX 78721 USA

2:30 PM Student
Z3, Transmission Electron Microscopy Investigations of the Structure and Stability of Gate Dielectrics: *Yan Yang*[1]; Zhiqiang Chen[1]; Lisa F. Edge[2]; Hao Li[3]; Y. Wei[3]; K. Eisenbeiser[3]; Darrell G. Schlom[2]; Susanne Stemmer[1]; [1]University of California, Matls. Dept., Santa Barbara, CA 93106-5050 USA; [2]Pennsylvania State University, Matls. Sci. & Engrg., Matls. Rsch. Inst. Bldg., University Park, PA 16802-6602 USA; [3]Motorola, Physl. Sci. Rsch. Lab., Tempe, AZ 85284 USA

2:50 PM Student
Z4, Spin Dependent Recombination at Deep Level Centers at the 4H Silicon Carbide/Silicon Dioxide Interface: Nathaniel A. Bohna[1]; *David J. Meyer*[1]; Patrick M. Lenahan[1]; Aivars Lelis[2]; Robert S. Okojie[3]; [1]The Pennsylvania State University, Dept. Engrg. Sci. & Mech., 212 EES Bldg., University Park, PA 16802 USA; [2]US Army Research Laboratory, 2800 Powder Mill Rd., Adelphi, MD 20783 USA; [3]NASA-Glenn Research Center, 21000 Brookpart Rd., Cleveland, OH 44135 USA

3:10 PM Break

3:30 PM
Z5, Effect of SiOx Content on Electrical and Morphological Properties of HfSiOx Thin Films: *Koray Karakaya*[1]; Dave H.A. Blank[1]; [1]University of Twente, MESA+ Rsch. Inst., PO Box 217, Enschede 7500AE The Netherlands

3:50 PM
Z6, Combinatorial Ternary Phase Diagramming for Discovery of New Gate Materials and their Characterizations: *T. Chikyow*[1]; P. Ahmet[2]; K. Nakajima[2]; N. Okazaki[2]; K. Fujimoto[2]; M. Watanabe[2]; K. Hasegawa[3]; T. Tamori[3]; T. Hasegawa[3]; T. Aoyama[3]; H. Koinuma[3]; [1]COMET-NIMS, National Institute for Material Science, Nanomatl. Rsch. Labs., 1-2-1 Sengen, Ibaraki, Tsukuba 305-0047 Japan; [2]COMET-NIMS, National Institute for Material Science, Advd. Matl. Labs., 1-1 Namiki, Tsukuba, Ibaraki 305-0044 Japan; [3]Tokyo Institute of Technology, Matls. & Structures Lab., 4259 Nagatsuta, Midori-ku, Yokohama 226-8503 Japan

Session AA:
AlGaN/GaN HEMTs: Growth

Thursday PM
June 26, 2003 **Room: Panorama East**

Session Chair: **Andrew Allerman, Sandia National Laboratories, Albuquerque, NM 87185 USA**

1:30 PM
AA1, Correlation Between Dislocation Density and Mobility of GaN Based HEMTs: *Allen M. West*[1]; Stephen R. Lee[1]; Andrew A. Allerman[1]; Daniel D. Koleske[1]; Steven R. Kurtz[1]; Karen E. Waldrip[1]; Jeffrey J. Figiel[1]; Cammy R. Abernathy[2]; [1]Sandia National Laboratories, PO Box 5800, MS 0601, Albuquerque, NM 87185 USA; [2]University of Florida, Matls. Sci. & Engrg., 100 Rhines Hall, PO Box 116400, Gainesville, FL 32611-6400 USA

1:50 PM
AA2, Improved Performance of AlGaN/GaN HEMTs Grown by Metalorganic Chemical Vapor Deposition: *Michael M. Wong*[1]; Uttiya Chowdhury[1]; Raymond Kirk Price[2]; Ting Gang Zhu[1]; Dongwon Yoo[1]; Milton Feng[2]; Russell D. Dupuis[1]; [1]The University of Texas at Austin, Microelect. Rsch. Ctr., 10100 Burnet Rd., Bldg. 160, Austin, TX 78758 USA; [2]The University of Illinois at Urbana-Champaign, Ctr. for Compound Semiconductor Microelect., 208 N. Wright St., Urbana, IL 61801 USA

2:10 PM
AA3, AlGaN/GaN HEMTs on Si Substrates: Influence of Layer Structure on Device Performance: *Peter Javorka*[1]; Juraj Bernát[1]; Yilmaz Dikme[2]; Alfred Fox[1]; Michel Marso[1]; Rolf Jansen[2]; Michael Heuken[3]; Hans Lüth[1]; Peter Kordos[1]; [1]Institut für Schichten und Grenzflächen, Rsch. Ctr. Jülich, Jülich D-52425 Germany; [2]Institut für Theoretishe Elektrotechnik, RWTH Aachen, Aachen D-52074 Germany; [3]Aixtron AG, Aachen D-52072 Germany

2:30 PM
AA4, The Influence of Layer Parameters on the 2DEG Density in AlGaN/GaN Heterostructures: *Stefan Karl Davidsson*[1]; Manjula Gurusinghe[2]; Thorwald Andersson[2]; Herbert Zirath[1]; [1]Chalmers University of Technology, Dept. of Microelect., Microwave Elect. Lab., Göteborg 412 96 Sweden; [2]Chalmers University of Technology, Dept. of Microelect. & Nanosci., Appl. Semiconductor Physics, Göteborg 412 96 Sweden

2:50 PM
AA5, Bow Reduction of AlGaN/GaN HEMT Structures Using Interlayers by MOVPE: *Masahiro Sakai*[1]; Takashi Egawa[2]; Hiroyasu Ishikawa[2]; Takashi Jimbo[2]; [1]Nagaya Institute of Technology, Rsch. Ctr. for Micro-Struct. Devices (On leave from NGK Insulators, Ltd.), Gokiso-cho, Showa-ku, Nagoya, Aichi 466-8555 Japan; [2]Nagaya Institute of Technology, Rsch. Ctr. for Micro-Struct. Devices, Gokiso-cho, Showa-ku, Nagoya, Aichi 466-8555 Japan

Session BB: SiC: Defects, Processing and Devices

Thursday PM
June 26, 2003 **Room: Auditorium**

Session Chairs: **Philip Neudeck, NASA Glenn Research Center, Cleveland, OH 44135-3127 USA; Robert Stahlbush, Naval Research Laboratory, Washington, DC 20375 USA**

1:30 PM
BB1, Dependence of Stacking Fault Growth on Current Density and Stress in SiC PiN Diodes: *R. E. Stahlbush*[1]; M. Fatemi[1]; M. E. Twigg[1]; J. B. Fedison[2]; J. B. Tucker[4]; S. D. Arthur[4]; S. Wang[3]; [1]Naval Research Laboratory, Code 6813, Washington, DC 20375 USA; [2]General Electric, Global Rsch. Ctr., Niskayuna, NY 12309 USA; [3]Sterling Semiconductor, Danbury, CT 06810 USA

1:50 PM
BB2, Partial Dislocations and Stacking Faults in 4H-SiC PiN Diodes: *Mark E. Twigg*[1]; Robert E. Stalhbush[2]; Mohammad Fatemi[2]; Jeffrey B. Fedison[3]; Jesse B. Tucker[3]; Steven D. Arthur[3]; Shaoping Wang[4]; [1]Naval Research Laboratory, Code 6812, Elect. Sci. & Tech. Div., 4555 Overlook Ave. S.W., Washington, DC 20375 USA; [2]Naval Research Laboratory, Elect. Sci. & Tech. Div., 4555 Overlook Ave., S.W., Washington, DC 20375 USA; [3]General Electric Global Research Center, Niskayuna, NY 12309 USA; [4]Sterling Semiconductor, Danbury, CT 06810 USA

2:10 PM
BB3, Study of Forward Voltage Drop Degradation in Diffused SiC PIN Diodes: *Stanislav Soloviev*[1]; Dmitry Cherednichenko[1]; Ying Gao[2]; Yuefei Ma[1]; Alexander Grekov[1]; Tangali S. Sudarshan[1]; [1]University of South Carolina, Electl. Engrg., 301 S. Main St., Swearingen Bldg., Columbia, SC 29208 USA; [2]Bandgap Technologies, Inc.

2:30 PM
BB4, Vanadium, Carbon Vacancies, and Boron in Semi-Insulating SiC: *Mary Ellen Zvanut*[1]; Valeriy Konovalov[1]; William W. Mitchel[2]; William D. Mitchell[3]; [1]University of Alabama at Birmingham, Physics, 1300 University Blvd., 310 CH, Birmingham, AL 35294-1170 USA; [2]Air Force Research Laboratory, AFRL/MLPS, 3005 P St., Rm. 243, Wright Patterson AFB, OH 45433-7707 USA

2:50 PM Student
BB5, Traps in Double Implanted 4H-SiC Diodes: *Souvick Mitra*[1]; Mulpuri Venkata Rao[1]; Nick Papanicolaou[2]; Ken Jones[3]; O. Wayne Holland[4]; [1]George Mason University, Dept. of Electl. & Compu. Engrg., 4400 University Dr., MSN 1G5, Fairfax, VA 22030 USA; [2]Naval Research Laboratory, 4555 Overlook Ave. SW, Washington, DC 20375 USA; [3]Army Research Laboratory, Adelphi, MD 20783-1197 USA; [4]University of North Texas, Dept. of Physics, Denton, TX 76203-4127 USA

3:10 PM Break

3:30 PM
BB6, Silicon Carbide-Oxide Interfaces: The Role of Charged Defects on High Temperature Device Performance: *Ruby Nandini Ghosh*[1]; Peter Tobias[1]; Brage Golding[1]; [1]Michigan State University, Ctr. for Sensor Matls., 2167 Biomed Phys. Scis., E. Lansing, MI 48824-2320 USA

3:50 PM
BB7, Reduction of the Interface Trap Density of the 4H-SiC (11-20)/SiO2 Interface: *Sarit Dhar*[1]; [1]Vanderbilt University, Interdisciplinary Matls. Sci., PO Box 1807, Sta. B, Nashville, TN 37235 USA

4:10 PM Student
BB8, The Influence of Processing Steps on Reverse-Bias Characteristics of 4H-SiC Schottky Barrier Diodes: *Kelly A. Neely*[1]; [1]Sandia National Laboratory, Advd. & Exploratory Sys. (2131), PO Box 5800, MS0482, Albuquerque, NM 87185-0482 USA

4:30 PM
BB9, 16.8 mΩcm², 600 V, Normally-Off Planar Power ACCUFET in 4H-SiC: *Saichirou Kaneko*[1]; Masakatsu Hoshi[1]; Satoshi Tanimoto[1]; Tetsuya Hayashi[1]; Hideaki Tanaka[1]; [1]Nissan Motor Company, Ltd., Elect. & Info. Tech. Rsch. Lab., 1 Natsushima-cho, Yokosuka-shi, Kanagawa 237-8523 Japan

4:50 PM
BB10, Late News

Session CC:
Nitrides: Substrates and Properties

Friday AM
June 27, 2003 **Room: Ballroom Center**

Session Chairs: **Joan Redwing, Pennsylvania State University, University Park, PA 16802-5006 USA; Thomas Myers, West Virginia University, Morgantown, WV 26506 USA**

8:20 AM
CC1, HVPE-GaN Thick Films for Quasi-Substrate Applications: Strain Distribution and Wafer Bending: *T. Paskova*[1]; E. Valcheva[1]; V. Darakchieva[1]; P. P. Paskov[1]; I. G. Ivanov[1]; B. Monemar[1]; T. Bötcher[2]; D. Hommel[2]; [1]Linköping University, Dept. of Physics & Measurement Tech., Linköping S-581 83 Sweden; [2]University of Bremen, Inst. of Solid State Physics, Bremen D-28334 Germany

8:40 AM
CC2, Strain Reduction for Crack-Free Growth of AlGaN on Porous GaN: *Qhalid Fareed*[1]; M. Asif Khan[1]; Vinod Adivarahan[1]; R. Molnar[2]; [1]University of South Carolina, Dept. of Electl. Engrg., 301 S. Main St., Columbia, SC 29208 USA; [2]Massachusetts Institute of Technology Lincoln Labs, Lexington, MA 02173 USA

9:00 AM Student
CC3, Asymmetric Strain in III-N Resulting from the Substrate with Direction-Dependent Thermal Expansion Coefficients: *Sa Huang*[1]; Sangbeom Kang[1]; William Alan Doolittle[1]; April S. Brown[2]; [1]Georgia Institute of Technology, Sch. of Electl. & Compu. Engrg., Microelect. Rsch. Ctr., 791 Atlantic Dr., Atlanta, GA 30332 USA; [2]Duke University, Electl. & Compu. Engrg., 128 Hudson Hall, Durham, NC 27706 USA

9:20 AM Student
CC4, III-Nitride Growth on Lithium Niobate: Polarity Control by Electrostatic Boundary Condition: *Gon Namkoong*[1]; W. Alan Doolittle[1]; Alexander Carver[1]; Walter Henderson[1]; Dieter Jundt[2]; April S. Brown[3]; [1]Georgia Institute of Technology, Sch. of Electl. & Compu. Engrg., MIRC, 791 Atlantic Dr. N.W., Atlanta, GA 30341 USA; [2]Crystal Technology, Inc, Palo Alto, CA 94303 USA; [3]Duke University, Durham, NC 27708 USA

9:40 AM
CC5, Homoepitaxy of Nitride Films on Bulk Nitride Substrates and Sapphire-Based Templates by MOCVD: *Dae-Woo Kim*[1]; Seungjong Lee[1]; A. Pechnikov[2]; L. Shapovalova[2]; V. Soukhoveev[2]; Alexander S. Usikov[2]; Vladimir A. Dmitriev[2]; Subhash Mahajan[1]; [1]Arizona State University, Chem. & Matls. Engrg., Tempe, AZ 85287-6006 USA; [2]TDI, 12214 Plum Orchard Dr., Silver Spring, MD 20904 USA

10:00 AM Break

10:20 AM Student
CC6, Growth of High-Quality AlN Single Crystals by Sublimation: *Rafael Dalmau*[1]; Raoul Schlesser[1]; Zlatko Sitar[1]; [1]North Carolina State University, Dept. of Matls. Sci. & Engrg., 1001 Capability Dr., RB 1, Campus Box 7919, Raleigh, NC 27695-7919 USA

10:40 AM
CC7, Near-Band-Edge Photoluminescence Dynamics in AlN Epilayers Grown on A-Plane Single Crystal Bulk AlN: *Edmundas Kuokstis*[1]; Jinwei Yang[1]; Asif M. Khan[1]; Qhalid R.S. Fareed[2]; Remis Gaska[2]; Michael S. Shur[2]; [1]University of South Carolina, Dept. of Electl. Engrg., 301 Main St., Columbia, SC 29208 USA; [2]Sensor Electronic Technology, Inc., 1195 Atlas Rd., Columbia, SC 29209 USA

11:00 AM
CC8, Effect of Growth Condition on Structural Properties of AlN Epitaxial Layer: *David W. Weyburne*[1]; *Qing S. Paduano*[1]; Janusz Kozlowski[2]; J. Serafinczuk[2]; Zuzanna Liliental-Weber[3]; [1]Air Force Research Laboratory, SNHC, 80 Scott Dr., Hanscom AFB, MA 01371 USA; [2]Wroclaw University of Technology, Janiszewskiego 11/17, 50-372, Wroclaw Poland; [3]Lawrence Berkeley National Laboratory, One Cyclotron Rd., Berkeley, CA 94720 USA

11:20 AM
CC9, Growth Mode Control of GaN by Si using Si-Irradiation Technique in rf-MBE: *Xu Qiang Shen*[1]; Toshihide Ide[1]; Mitsuaki Shimizu[1]; Hajime Okumura[1]; [1]National Institute of Advanced Industrial Science and Technology, Power Elect. Rsch. Ctr., Central 2, 1-1-1, Umezono, Tsukuba, Ibaraki 305-8568 Japan

11:40 AM
CC10, Late News

Session DD:
Epitaxy III: Devices

Friday AM
June 27, 2003 **Room: Ballroom East**

Session Chairs: **Archie Holmes, University of Texas, Austin, TX 78758-4445 USA; Abbas Torabi, Raytheon RFC, Andover, MA 01810 USA**

8:20 AM Student
DD1, Monolithic Integration of AlGaInP Light Emitting Diodes on Si Substrates: *O. Kwon*[1]; J. J. Boeckl[1]; M. L. Lee[2]; A. Pitera[2]; E. A. Fitzgerald[2]; S. A. Ringel[1]; [1]The Ohio State University, Dept. of Electl. Engrg., 2015 Neil Ave., Columbus, OH 43210 USA; [2]Massachusetts Institute of Technology, Dept. of Matls. Sci. & Engrg., 77 Massachusetts Ave., Cambridge, MA 02139 USA

8:40 AM Student
DD2, Planarized Regrowth Technology for Vertically Stacked Waveguides using Metalorganic Chemical Vapor Deposition: *Seung-June Choi*[1]; Wilson Lin[2]; Sang Jun Choi[1]; P. Daniel Dapkus[1]; Giora Griffel[2]; Ray Menna[2]; John Connolly[2]; [1]University of Southern California, EE-Electrophysics, 3651 USC Watt Way, VHE 302, Los Angeles, CA 90089 USA; [2]Princeton Lightwave, Inc., 2601 Rte. 130 S., Cranbury, NJ 08512 USA

9:00 AM Student
DD3, Semiconductor Optical Amplifier and Electroabsorption Modulator Monolithically Integrated via Selective Area Growth: *Ryan A. Stevenson*[1]; Sang Jun Choi[1]; Kostadin Djordjev[1]; P. D. Dapkus[1]; [1]University of Southern California, Compound Semiconductor Lab., University Park, 3651 USC Watt Way, VHE 302a, Los Angeles, CA 90089-0243 USA

9:20 AM Student
DD4, Long-Wavelength GaAsSb Quantum Well Heterostructures Laser Grown by Metalorganic Chemical Vapor Deposition: *Min-Soo Noh*[1]; Ying-Lan Chang[2]; Gabriel Walter[3]; Nick Holonyak[3]; Russell D. Dupuis[1]; [1]The University of Texas at Austin, Electl. Engrg., Microelect. Rsch. Ctr., 10100 Burnet Rd., Bldg. 160, Austin, TX 78758 USA; [2]Agilent Technologies Inc., Agilent Labs., 3500 Deer Creek Rd., Palo Alto, CA 94304 USA; [3]The University of Illinois at Urbana-Champaign, Ctr. for Compound Semiconductor Microelect., Urbana, IL 61801 USA

9:40 AM Student
DD5, Effects of Silicon Complexes on Tunnel Junctions for Vertical Epitaxial Integration: *Jizhi Zhang*[2]; Kei May Lau[1]; Neal Anderson[2]; [1]Hong Kong University of Science & Technology, EEE Dept., Clear Water Bay, Kowloon Hong Kong; [2]University of Massachusetts, Amherst, ECE Dept., Amherst, MA 01003 USA

10:00 AM Break

10:20 AM Student
DD6, InAs/GaP/InGaP High-Temperature Power Schottky Rectifier: *An Chen*[1]; Aristo Yulius[1]; Jerry M. Woodall[1]; [1]Yale University, Dept. of Electl. Engrg., PO Box 208284, New Haven, CT 06511 USA

10:40 AM Student
DD7, Optimization of Metalorganic Chemical Vapor Deposition of AlGaN/GaN Heterostructures for High Electron Mobility Transistors: *Yugang Zhou*[1]; Chak-wah Tang[1]; Kei May Lau[1]; [1]Hong Kong University of Science and Technology, Photonics Tech. Ctr., Dept. of Electl. & Elect. Engrg., Clear Water Bay, Kowloon Hong Kong

11:00 AM
DD8, Stability of AlGaN/GaN HEMT Epitaxial Wafers: *David William Gotthold*[1]; Ronald Birkhahn[1]; Shiping P. Guo[1]; Brian Albert[1]; Boris Peres[1]; [1]EMCORE Corporation, 145 Belmont Dr., Somerset, NJ 08873 USA

11:20 AM
DD9, Study of Collector-Up AlGaN/GaN HBTs Grown by Metalorganic Chemical Vapor Deposition: *Uttiya Chowdhury*[1]; Ting Gang Zhu[1]; Michael Ming Wong[1]; Dongwon Yoo[1]; Milton Feng[2]; Peter Asbeck[3]; Russell D. Dupuis[1]; [1]The University of Texas at Austin, Microelect. Rsch. Ctr., 10100 Burnet Rd., Bldg. 160, Austin, TX 78758 USA; [2]The University of Illinois at Urbana-Champaign, Ctr. for Compound Semiconductor Microelect., 208 N. Wright St., Urbana, IL 61801 USA; [3]University of California at San Diego, Dept. of Electl. & Compu. Engrg., MC 0407, 9500 Gilman Dr., La Jolla, CA 92093-0407 USA

11:40 AM
DD10, Late News

Session EE: Low-Dimensional Structures: Quantum Dots and Wires

Friday AM
June 27, 2003 **Room: Theatre**

Session Chairs: **James Merz, University of Notre Dame, Notre Dame, IN 46556-5602 USA; Mark Miller, University of Utah, Salt Lake City, UT 84112-0506 USA**

8:20 AM
EE1, The Growth Behaviours of Aligned ZnO Nanowires on Si, Sapphire, and GaN Substrates by Carbothermal Reduction and Thermal CVD Methods: Hyun-Gi Hong[2]; Jung Inn Sohn[2]; *Seonghoon Lee*[1]; [1]Seoul National University, Chmst. & Molecular Engrg., San 56-1, Shillim-Dong, Seoul 151-747 Korea; [2]Kwangju Institute of Science and Technology, 1 Oryong-Dong, Puk-Ku, Kwangju 500-712 Korea

8:40 AM
EE2, Microcharacterization of Size-Selected, Colloidal InP Quantum Dots and Rods: *S. P. Ahrenkiel*[1]; O. I. Micic[1]; J. M. Nedeljkovic[1]; A. J. Nozik[1]; [1]National Renewable Energy Laboratory, 1617 Cole Blvd., Golden, CO 80401 USA

9:00 AM
EE3, Observation of Multiple Negative Differential Resistances in Semiconductor Quantum Wires Self Assembled in Porous Alumina Templates: *Supriyo Bandyopadhyay*[1]; Sandipan Pramanik[1]; [1]Virginia Commonwealth University, Electl. Engrg., 601 W. Main St., Richmond, VA 23284 USA

9:20 AM
EE4, One Unit Cell Width Ferroelectric Domains: *Shlomo Berger*[1]; Yariv Drezner[1]; [1]Technion, Matls. Engrg., Haifa 32000 Israel

9:40 AM
EE5, MBE-Grown Fe Ferromagnetic Quantum Dots: Yesha Zheng[1]; Tak Ki So[1]; Ning Wang[1]; *Iam Keong Sou*[1]; [1]The Hong Kong University of Science and Technology, Dept. of Physics, Clear Water Bay, Kowloon, Hong Kong China

10:00 AM Break

Session FF: Silicon/Germanium Low-Dimensional Structures

Friday AM
June 27, 2003 **Room: Theatre**

Session Chairs: **Mark Miller, University of Utah, Salt Lake City, UT 84112-0506 USA; James Merz, University of Notre Dame, Notre Dame, IN 46556-5602 USA**

10:20 AM
FF1, Ordering of Self-Assembled Ge Islands on Photolithographically Patterned Structures on Si (001): *Bin Yang*[1]; Arthur R. Woll[2]; Feng Liu[3]; Max G. Lagally[1]; [1]University of Wisconsin, Madison, Madison, WI 53706 USA; [2]Cornell University, Chess, Ithaca, NY USA; [3]University of Utah, Dept. of Matls. Sci. & Engrg., Salt Lake City, UT 84112 USA

10:40 AM
FF2, Growth of Chemically Vapor Deposited Ge Nanowires on Si(001): *Ted Kamins*[1]; [1]Quantum Science Research, Hewlett-Packard Labs., Palo Alto, CA 94304 USA

11:00 AM
FF3, Silicon Nanowires Grown by Vapor Phase Epitaxy: *Sun-Gon Jun*[1]; *Mark S. Miller*[1]; [1]University of Utah, Matls. Sci. & Engrg., 122 S. Central Campus Dr., Rm. 304, Salt Lake City, UT 84112-0560 USA

11:20 AM
FF4, Strong Near-Infrared Photoluminescence and Absorption from Si/SiGe Type-II Multiple Quantum Wells on Bulk Crystal SiGe Substrates: *Shuran Sheng*[1]; Nelson L. Rowell[2]; Sean P. McAlister[1]; [1]Institute for Microstructural Sciences, Natl. Rsch. Council of Canada, Bldg. M-50, 1200 Montreal Rd., Ottawa, Ontario K1A 0R6 Canada; [2]Institute for National Measurement Standards, Natl. Rsch. Council of Canada, 1200 Montreal Rd., Ottawa, Ontario K1A 0R6 Canada

Session GG: AlGaN/GaN HEMTs: RF Dispersion, Processing Effects and Novel Gate Oxides

Friday AM
June 27, 2003 **Room: Saltair**

Session Chair: **Michael Manfra, Lucent Technologies, Bell Labs., Murray Hill, NJ 07974 USA**

8:20 AM
GG1, Influence of Dual Frequency PECVD Si3N4 Passivation on the Electrical Characteristics of AlGaN/GaN Heterostructure Field Effect Transistors: Wei Sin Tan[1]; *Peter A. Houston*[1]; Geoff Hill[1]; Charlie M.W. Low[1]; Robert J. Airey[1]; Peter J. Parbrook[1]; [1]University of Sheffield, Dept. of Elect. & Electl. Engrg., Mappin St., Sheffield S17 4PP UK

8:40 AM
GG2, RF Dispersion in Unpassivated AlGaN/GaN HEMTs Grown by MBE: *Oleg Mitrofanov*[1]; Michael Manfra[1]; Nils Weimann[1]; [1]Bell Laboratories, Lucent Technologies, 600 Mountain Ave., Murray Hill, NJ 07974 USA

9:00 AM
GG3, Reduction of Surface-Induced Current Collapse in AlGaN/GaN HFETs on Free-Standing GaN Substrates: *Yoshihiro Irokawa*[1]; B. Luo[2]; F. Ren[2]; B. P. Gila[3]; C. R. Abernathy[3]; S. J. Pearton[3]; C.-C. Pan[4]; G.-T. Chen[4]; J.-I. Chyi[4]; S. S. Park[5]; Y. J. Park[5]; [1]Toyota Central R&D Labs., Inc., Nagakute, Aichi 480-1192 Japan; [2]University of Florida, Dept. of Chem. Engrg., Gainesville, FL 32611 USA; [3]University of Florida, Dept. of Matls. Sci. & Engrg., Gainesville, FL 32611 USA; [4]National Central University, Dept. of Electl. Engrg., Chung-Li 32054 Taiwan; [5]Samsung Advanced Institute of Technology, Suwon 440-600 S. Korea

9:20 AM Student
GG4, The Effect of Processing Induced Stress on AlGaN/GaN HFET Characteristics: *Adam M. Conway*[1]; Peter M. Asbeck[1]; Jeong S. Moon[2]; [1]University of California, San Diego, ECE Dept., 9500 Gilman Dr., MS 0407, San Diego, CA 92093 USA; [2]HRL Laboratories LLC, 3011 Malibu Canyon Rd., Malibu, CA 92065 USA

9:40 AM
GG5, Characterization of Processing Effects on Defects in AlGaN/GaN HEMT's and Correlation with Device Performance: Gregg H. Jessen[1]; G. David Via[1]; James K. Gillespie[1]; *Robert C. Fitch*[1]; Brad D. White[2]; Shawn T. Bradley[2]; Dennis E. Walker[2]; Leonard J. Brillson[2]; [1]Air Force Research Laboratory, Sensors Direct., Bldg. 620, 2241 Avionics Cir., Wright Patterson AFB, OH 45433-7322 USA; [2]Ohio State University, Dept. of Electl, Engrg., 205 Dreese Lab., 2015 Neil Ave., Columbus, OH 43210 USA

10:00 AM Break

10:20 AM Student
GG6, Trap States Induced Frequency Dispersion of AlGaN/GaN Heterostructure Field Effect Transistors: *R. M. Chu*[1]; Y. G. Zhou[1]; K. J. Chen[1]; K. M. Lau[1]; [1]Hong Kong University of Science & Technology, Dept. of Electl. & Elect. Engrg., Clear Water Bay, Kowloon Hong Kong

10:40 AM Student
GG7, AlGaN/GaN Metal Oxide Semiconductor Field Effect Transistors using Titanium Dioxide: *Peter J. Hansen*[1]; S. Heikman[2]; S. P. DenBaars[1]; R. A. York[2]; U. K. Mishra[2]; J. S. Speck[1]; V. Vaithyanathan[3]; D. G. Schlom[3]; [1]University of California, Matls., Santa Barbara, CA 93106 USA; [2]University of California, ECE, Santa Barbara, CA 93106 USA ; [3]The Pennsylvania State University, Matls. Sci. & Engrg., University Park, PA 16802 USA

11:00 AM Student
GG8, AlGaN/GaN MOSHEMT Using Sc_2O_3 as the Gate Oxide: *Rishabh Mehandru*[1]; Ben Luo[1]; Jihyun Kim[1]; Fan Ren[1]; Brent P. Gila[2]; Andrea H. Onstine[2]; Cammy R. Abernathy[2]; Stephen J. Pearton[2]; D. Gotthold[3]; R. Birkhahn[3]; B. Peres[3]; R. Fitch[3]; J. Gillespie[4]; T. Jenkins[4]; J. Sewell[4]; D. Via[4]; A. Crespo[4]; [1]University of Florida, Chem. Engrg., C/O Rm. 227, Bldg. #723, Gainesville, FL 32611 USA; [2]University of Florida, Matls. Sci. & Engrg., Gainesville, FL 32611 USA; [3]EMCORE, Somerset, NJ 08873 USA; [4]Air Force Research Laboratory, Sensors Direct., Wright-Patterson AFB, OH 45433-7322 USA

11:20 AM Student
GG9, Highly Selective, Smooth PEC Undercut Etching of Heterostructures: *Yan Gao*[1]; Andreas R. Stonas[2]; Ilan Ben-Yaacov[2]; Umesh K. Mishra[2]; Steve P. DenBaars[1]; Evelyn L. Hu[1]; [1]University of California, Santa Barbara, Matls. Dept., Santa Barbara, CA 93106 USA; [2]University of California, Santa Barbara, Electl. & Compu. Engrg. Dept., Santa Barbara, CA 93106 USA

Session HH: Narrow Bandgap Nitrides and Arsenides

Friday AM
June 27, 2003 **Room: Auditorium**

Session Chairs: **Charles Tu, University of California, Dept. of Electl. & Compu. Engrg., La Jolla, CA 92093-0407 USA; Dan Friedman, National Renewable Energy Laboratory, Golden, CO 80401-3305 USA**

8:20 AM
HH1, Identification of Defects in GaNP by Optically Detected Magnetic Resonance: *Weimin M. Chen*[1]; N. Q. Thinh[1]; I. A. Buyanova[1]; C. W. Tu[2]; [1]Linkoping University, Dept. of Physics & Measurement Tech., Linkoping 581 83 Sweden; [2]University of California, Dept. of Electl. & Compu. Engrg., La Jolla, CA 92093-0407 USA

8:40 AM
HH2, Signature of the Defect Limiting the Minority-Carrier Lifetime in GaInNAs: *Aaron J. Ptak*[1]; Steve W. Johnston[1]; Sarah Kurtz[1]; [1]National Renewable Energy Laboratory, Natl. Ctr. for Photovoltaics, MS3212, 1617 Cole Blvd., Golden, CO 80401 USA

9:00 AM
HH3, Trap-Dominated Minority-Carrier Recombination in GaInNAs pn Junctions: *Daniel J. Friedman*[1]; John F. Geisz[1]; [1]National Renewable Energy Laboratory, 1617 Cole Blvd., Golden, CO 80401 USA

9:20 AM Student
HH4, Strong Photoluminescence Enhancement of 1.3 μm GaInNAs Active Layers by Introduction of Antimony: *Seth Robert Bank*[1]; Homan Bernard Yuen[1]; Wonill Ha[1]; Vincent Froedrick Gambin[1]; Mark Allen Wistey[1]; James S. Harris[1]; [1]Stanford University, Electl. Engrg., 126X CIS-X, Via Ortega, Stanford, CA 94305 USA

9:40 AM
HH5, Effects of MOCVD Growth Conditions on Properties of GaInNAs/GaAs Quantum Wells: Noppadon Nuntawong[1]; Hongjun Cao[1]; *Abdel-Rahman A. El-Emawy*[1]; Marek Osinski[1]; [1]University of New Mexico, Ctr. for High Tech. Matls., 1313 Goddard SE, Albuquerque, NM 87106 USA

10:00 AM Break

10:20 AM Student
HH6, An Investigation of GaNAs(Sb) for Strain Compensated Active Regions at 1.3 and 1.55 μm: *Homan Bernard Yuen*[1]; Seth Robert Bank[1]; Mark Allen Wistey[1]; Akihiro Moto[2]; James S. Harris[1]; [1]Stanford University, Electl. Engrg., 126X CIS-X, Via Ortega, Stanford, CA 94305 USA; [2]Innovation Core SEI Inc., 3235 Kifer Rd., Ste. 150, Santa Clara, CA 95051 USA

10:40 AM
HH7, Growth of Metastable GaAsBi Alloy by Molecular Beam Epitaxy: *Masahiro Yoshimoto*[1]; Satoshi Murata[1]; Akiyoshi Chayahara[2]; Junji Saraie[1]; Kunishige Oe[1]; [1]Kyoto Institute of Technology, Dept. Elect. & Info. Sci., Matsugasaki, Sakyo, Kyoto 606-8585 Japan; [2]AIST Kansai, 1-8-31, Midorigaoka, Ikeda, Osaka 563-8577 Japan

11:00 AM Student
HH8, Infra-Red Properties of Mn Doped InAs and (In,Mn)As Epitaxial Films: *Philip T. Chiu*[1]; Aaron J. Blattner[1]; Bruce W. Wessels[1]; [1]Northwestern University, Matls. Sci. & Engrg., 2220 N. Campus Dr., Cook Hall, Evanston, IL 60208 USA

TMS

184 Thorn Hill Road
Warrendale, PA 15086-7514 USA

www.tms.org

ADVANCE REGISTRATION FORM

JUNE 25–27, 2003 • 45th ELECTRONIC MATERIALS CONFERENCE • University of Utah • Salt Lake City, Utah

WEB Take advantage of the convenience of on-line pre-registration via the TMS website: **http://www.tms.org** Web registration requires credit card payment.

FAX Fax this form to TMS Meeting Services **724-776-3770** Fax registration requires credit card payment.

MAIL **Return this form with payment to** TMS Meeting Services 184 Thorn Hill Road Warrendale, PA 15086

Advance Registration Deadline: June 2, 2003 Payment must accompany form. Forms received after June 2nd will be processed at the next higher fee.

Please print or type

❍ Dr. ❍ Prof. ❍ Ms. **Member Identification Number:** (TMS or IEEE) _____

❍ Mr. ❍ Mrs. **This address is:** ❍ Business ❍ Home ❍ New Address ❍ Address Correction

_____
LAST NAME FIRST NAME MIDDLE INITIAL

Employer: _____

Title: _____

Address: _____

_____
CITY STATE/PROVINCE ZIP/POSTAL CODE COUNTRY

Telephone: _____ (COUNTRY AREA/CITY LOCAL NUMBER) **Fax:** _____ (COUNTRY AREA/CITY LOCAL NUMBER)

E-Mail Address: _____ **Guest/Spouse Name:** _____
GUESTS DO NOT RECEIVE ADMISSION TO TECHNICAL SESSIONS OR THURSDAY DINNER.

Please check the appropriate category and enter the totals where indicated.

Registration Fees (includes a one-year subscription to *Journal of Electronic Materials*)		**Fees to June 2, 2003**	**Fees after June 2, 2003**
❍ Full Conference Member		$382	$457
❍ Full Conference USA Nonmember		$542	$617
❍ Full Conference NON-USA Nonmember		$562	$637
❍ One Day Member	Day Attending: _____	$332	$382
❍ One Day USA Nonmember	Day Attending: _____	$492	$542
❍ One Day NON-USA Nonmember	Day Attending: _____	$512	$562
❍ Air Mail Delivery of *Journal of Electronic Materials* (Outside United States)		$20	$20

Registration Fees (without a one year subscription to *Journal of Electronic Materials*)		**Fees to June 2, 2003**	**Fees after June 2, 2003**
❍ Full Conference		$350	$425
❍ One Day	Day Attending: _____	$300	$350
❍ Student (Copy of student school identification card must accompany form.)		$150	$200

Social Function Tickets (Thursday Dinner Event included in full conference and student registration fees.)

❍ Adult One Day Attendee or Guest ..... Number:_____ @ $60/ea. = _____

❍ Child (12 years and younger) ..... Number:_____ @ $25/ea. = _____

❍ Check if you require transportation to the Thursday Dinner Event. ..... Number:_____

Payment Method

❍ Check payable to TMS. *Payment should be made in US dollars drawn on a US bank.*

❍ VISA ❍ MasterCard ❍ Diner's Club ❍ American Express

Card No.: _____ Exp.:_____

Cardholder Name.: _____

Cardholder Signature:_____

Totals

Registration Fees ..... $ _____

Additional Dinner Tickets ..... $ _____

TOTAL FEES PAID ..... $ _____

REFUND POLICY: Written requests must arrive at TMS no later than June 2, 2003. No refunds will be issued after June 2, 2003. A $50 processing fee will be charged for all cancellations.

ON-CAMPUS HOUSING RESERVATION FORM

JUNE 25–27, 2003 • 45th ELECTRONIC MATERIALS CONFERENCE • University of Utah • Salt Lake City, Utah

Attendees wishing to be housed on campus
are required to complete this reservation form.

ON-SITE HOUSING WILL NOT BE ACCOMODATED AT THE UNIVERSITY.

PAYMENT IN FULL MUST ACCOMPANY THIS FORM IN ORDER TO RESERVE A ROOM.

Please print or type:

Name: Mr. Ms. _____
(first) (last)

Affiliation _____

Address _____

City _____ State _____

Zip/Country Code _____ Country _____

Telephone (Home) _____ (Business) _____

Fax _____ E-mail _____

Please indicate any special needs here: _____

The residence hall accommodations reserved at the University are single and double rooms for individuals or couples. Bath facilities are shared. Rooms will be assigned on a first-request basis so early reservation is recommended.

I PLAN TO ATTEND EMC ONLY AND WISH TO MAKE THE FOLLOWING ARRANGEMENTS:
(See On-Campus Housing in this brochure for more details.)

PLAN C: Lodging Sunday through Thursday and 12 meals

I PLAN TO ATTEND BOTH DRC AND EMC. *I UNDERSTAND THAT I MUST REGISTER FOR THE DEVICE RESEARCH CONFERENCE SEPARATELY ON THE DRC REGISTRATION FORM, BUT WISH TO MAKE MY HOUSING AND MEAL ARRANGEMENTS ON THIS FORM AS FOLLOWS:* (Submit one Housing Reservation form only)

- ☐ PLAN C: Single Occupancy $245.00
- ☐ PLAN C: Double Occupancy $212.00

PLAN D: Lodging on Tuesday through Thursday and 8 meals
- ☐ PLAN D: Single Occupancy $155.00
- ☐ PLAN D: Double Occupancy $135.00

PLAN E: Lodging Wednesday and Thursday and 6 meals
- ☐ PLAN E: Single Occupancy $110.00
- ☐ PLAN E: Double Occupancy $99.00

SATURDAY NIGHT (JUNE 21) ROOM RATE:
Lodging Saturday evening and meals
- ☐ Single Occupancy $47.00
- ☐ Double Occupancy $40.00

FRIDAY NIGHT (JUNE 27) ROOM RATE:
Lodging Friday evening and meals
- ☐ Single Occupancy $47.00
- ☐ Double Occupancy $40.00

NOTE: PLEASE RETURN THIS FORM BY MAY 31, 2003 to:
BY MAIL: Meghan Webb, Conference Services, University of Utah,
110 S. Ft. Douglas Blvd., Salt Lake City, UT 84113
BY FAX: (if paying by credit card) 801-587-1002

Name of person sharing double room: _____

Requesting shared double accommodation; please assign roommate:
(Roommate will be assigned on a first request basis)

☐ Single ☐ Double

☐ Female ☐ Male

ARRIVAL DATE: _____

DEPARTURE DATE: _____

COMMUTER LUNCH PACKAGE
I plan to make off-campus housing arrangements and wish to purchase a Commuter Lunch Package for on-campus meals.
- ☐ 3 EMC Lunches $23.50 per person $ _____
- ☐ 5 DRC/EMC Lunches $34.50 per person $ _____

TOTAL U.S. Dollars accompanying this form $ _____

PAYMENT METHOD:
- ☐ Personal/Bank Check (check must be drawn on a U.S. Bank and made Payable to University Conference Services)
- ☐ Charge my Credit Card
- ☐ Master Card ☐ VISA ☐ American Express

Credit Card No.: _____

Expiration Date: _____

Signature: _____

Cardholder Name: _____

Return this form no later than May 31, 2003.

Confirmation of reservation (received by May 31, 2003) will be sent to you by the University of Utah Conference Services

If you have questions regarding on-campus reservations, please call 801-587-2980; fax: 801-587-1002; or e-mail: conferences@guesthouse.utah.edu

NOTE:
DO NOT mail or fax to TMS

SPACE RESERVATION APPLICATION AND CONTRACT

EMC 2003--ELECTRONIC MATERIALS CONFERENCE EXHIBITION

June 25-27, 2003 ·45th ELECTRONIC MATERIALS CONFERENCE
University of Utah, Salt Lake City, Utah

To reserve space for the Exhibition, complete this form and return to TMS at the address or fax given below.
To register electronically, visit:: http://www.tms.org/EMC.html

Or Contact: Cindy A Wilson, TMS, 184 Thorn Hill Rd, Warrendale, PA 15086-7528;
Telephone: (724) 776-9000, ext. 231 • Fax: (724) 776-3770 • Email: wilson@tms.org

It is understood that upon receipt of the completed form, TMS will process our options, assigning a space location. Space rental must be paid in full by June 14, 2003. A deposit of $275 is required to secure each space reserved and must be paid at the date of application. The deposit is refundable, less a $50 cancellation fee, if cancelled in writing before May 25, 2003. Application for space rental indicates the applicant's willingness to abide by all exhibit terms and conditions, and general regulations attached to this application.

TMS is hereby authorized to reserve the specified quantity of 10' x 10' exhibition space(s) for our company in the 2003 EMC Exhibition:

Signature: _____ Date:_____

Print name of Exhibitor Authorized Signature: _____

Contact Person: _____
(to receive correspondence & exhibit materials – if different than above)

Company Name _____
(as will appear in Exhibitor listings):

Address: _____

City: _____ State/Province: _____ Zip/Postal Code:_____

Country: _____ E-Mail: _____

Telephone:_____ Fax: _____

PLEASE RESERVE _____ (QUANTITY) 10' X 10' SPACES @ $1,100.00 per 10'x10' space
The exhibit space rental will include: draped back wall and side rail dividers; 6" x 30" draped table; two chairs; wastebasket; standard electricity and lighting; and one exhibitor technical session badge.

Payment Information:

☐ CHECK (Made payable to TMS) TOTAL AMOUNT ENCLOSED:_____

☐ VISA ☐ MasterCard ☐ Diners Club ☐ American Express

Card Number: _____ Expiration Date: _____

Cardholder Name:_____ Signature_____

TMS USE ONLY

Accepted by: _____ Date: _____

Space Number Assigned: _____ Invoice #: _____ Invoice Date:_____ Invoice Amount:_____

MEMBERSHIP APPLICATION

PLEASE TYPE OR PRINT

❒ Mr. ❒ Mrs. ❒ Ms.
❒ Dr. ❒ Professor

SEND MAIL TO:
- ❒ Business Address
- ❒ Home Address

TECHNICAL DIVISION SELECTION:
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THROUGH WHAT MEANS WERE YOU ENCOURAGED TO JOIN TMS?
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- ❒ Publications Catalog
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- ❒ Colleague
- ❒ Other _____

BIRTHDATE:
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LAST FIRST MIDDLE INITIAL

TITLE: _____

COMPANY OR ORGANIZATION: _____

BUSINESS: _____
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PHONE FAX E-MAIL

WHAT IS THE PRIMARY ACTIVITY OF YOUR PLACE OF EMPLOYMENT? (check one)
- ❒ Commercial Laboratory
- ❒ Government/Nonprofit Laboratory
- ❒ Engineered Materials Producer
- ❒ Manufacturer of Parts/Components
- ❒ Manufacturer of Finished Products (OEMs)
- ❒ Primary Metals Producer
- ❒ Secondary Metals Producer
- ❒ Producer/Processor of Materials
- ❒ Educational
- ❒ Engineering or Consulting Firm
- ❒ Other _____

WHAT BEST DESCRIBES YOUR PRIMARY JOB FUNCTION? (check one)
- ❒ Applications/Product Development
- ❒ Basic Research
- ❒ Product Engineering and Design
- ❒ Technical/Lab Management
- ❒ Process Engineering
- ❒ Metallurgical Materials Selection
- ❒ Corporate Management
- ❒ R & D Engineer
- ❒ R & D Scientist
- ❒ R & D Management
- ❒ Manuf./Production Management
- ❒ Quality Engineering
- ❒ Marketing or Sales
- ❒ Other _____
- ❒ Consultant
- ❒ Educator
- ❒ Student

OTHER SOCIETY AFFILIATIONS: _____

EDUCATION TO DATE:

	Name of School	Dates Attended Month/Year–Month/Year	Major Subject/ Engineering Field	Degree Received or Expected Graduation Date: Month/Year
B.S. ❒				
M.S. ❒				
Ph.D. ❒				

REGISTERED PROFESSIONAL ENGINEER? ❒ Yes ❒ No STATE: _____ YEAR OF REGISTRATION: _____

RECORD OF EXPERIENCE:

(List most recent record of employment. If you do not possess a qualifying degree, please include your last seven years of experience.)

From: _____ Title: _____
Company: _____
To: _____ Nature of Company's Business: _____
Total Time with Company: _____
Engineering Responsibilities: _____

TO APPLICANT

If you have been encouraged to submit this application by a current member of TMS, please complete the following information:

Member's Name _____ Member # _____

I agree, if elected, to accept election, and to abide by the TMS bylaws.

Signature _____ Date _____

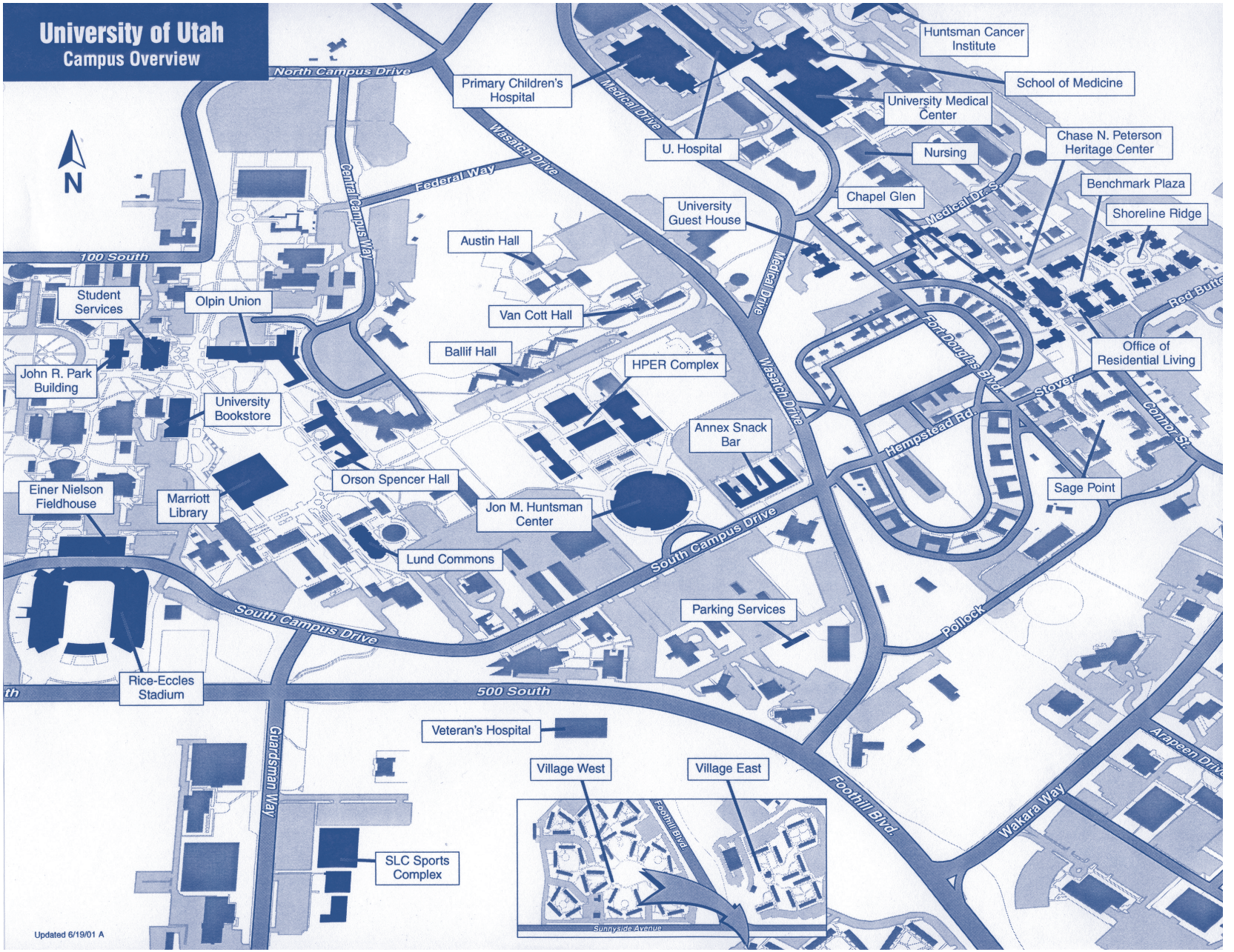
PREPAYMENT IS REQUIRED ($90) (checks should be made payable to TMS in U.S. dollars drawn on a U.S. bank)
- ❒ Check enclosed
- ❒ Bill my credit card: (check one)
  - ❒ American Express ❒ VISA ❒ MasterCard ❒ Diners Club

Credit Card # _____ Expiration Date _____

Cardholders Name _____

Signature _____

COMPLETE APPLICATION AND MAIL WITH PAYMENT TO: **184 Thorn Hill Road, Warrendale, PA 15086-7514**
Phone: 800-966-4867 or 724-776-9000 • Fax: 724-776-3770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