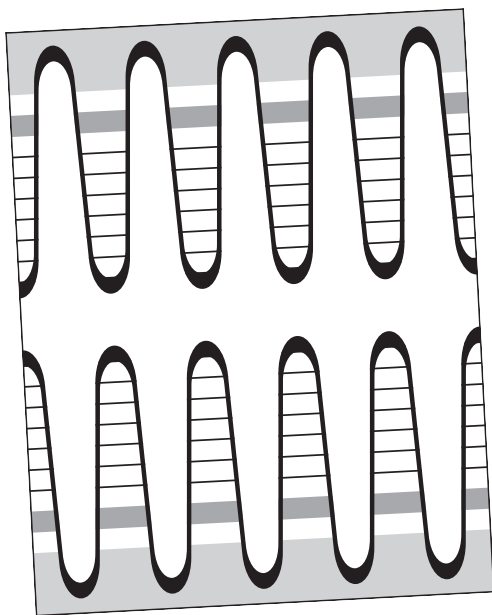


46th

2004 TMS ELECTRONIC MATERIALS CONFERENCE & EXHIBITION

University of Notre Dame
Notre Dame, IN

June 23–25, 2004



TMS

ADVANCE PROGRAM
Includes Housing and Registration Forms

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

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

INTENDED AUDIENCE

The 46th Annual Electronic Materials Conference (EMC) of the EMPMD Electronic Materials Committee of TMS (The Minerals, Metals, & Materials Society) provides a forum for topics of current interest and significance in the areas 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.

The conference has become international with approximately 80% national (USA) attendees and 20% international attendees. Each year, over 500 people in the electronic materials industry attend the conference.

DATE AND LOCATION

The 46th Annual EMC will be held at the University of Notre Dame, Indiana, June 23-25, 2004. This conference is being coordinated with the Device Research Conference of IEEE, which will take place the same week, June 21-23, 2004, at the same location.

ABOUT THE UNIVERSITY OF NOTRE DAME

A leading Catholic research university, Notre Dame stands among the nation's top 20 universities in terms of both academics and endowment. The university is organized into four undergraduate colleges—arts and letters, science, engineering, and business—the Graduate School, the Law School, and the School of Architecture. The combination of groundbreaking research and a long tradition of excellence in undergraduate and graduate education has attracted world-class teachers and scholars to the university's 729-member teaching-and-research faculty. The total student population of about 10,700 men and women is drawn from all 50 states and some 88 foreign countries and includes 1,500 graduate students and 1,150 professional students. Substantial new investments in a wide range of academic programs, institutes, centers, and major facilities have marked the past several years at Notre Dame. Founded in 1842 by a priest of the Congregation of Holy Cross, Notre

GENERAL INFORMATION

Dame is located north of the city of South Bend, Indiana, and about 90 miles southeast of Chicago. Its 1250-acre campus contains two lakes and 104 buildings with an insured replacement value of more than \$875 million. The university's Main Building with its famed Golden Dome is among the most widely known university landmarks in the world.

For more information on the University of Notre Dame, visit the university website at <http://www.nd.edu/>. An on-line campus map is available at <http://www.nd.edu/map/>.

CONFERENCE REGISTRATION

Early Housing and Registration are Advised.

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 23. EMC advance registration fees are as follows: full conference \$355; one day \$300; student \$150.

EMC 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.

Attendees may register in advance via the TMS OnLine form at www.tms.org/EMC.html or by completing the registration form provided in the center of this mailer. *Advance registrations will be accepted until June 2, 2004.* For questions concerning registration, please contact TMS Meeting Services by telephone: (724) 776-9000 ext. 243; fax: (724) 776-3770; or e-mail: mtgserv@tms.org.

Attendees may also register at the conference. Please note: On-site registration fees will be higher. On-site registration and advance registrant badge pick-up will be located in McKenna Hall beginning on Tues-

GENERAL INFORMATION

day afternoon continuing through Friday morning during the following hours:

Tuesday, June 22..... 3:00 pm–5:00 pm
Wednesday, June 23.....7:30 am–5:00 pm
Thursday, June 24.....7:30 am–4:00 pm
Friday, June 25.....7:30 am–10:00 am

REFUND POLICY

A written request must be sent to TMS Headquarters, 184 Thorn Hill Road, Warrendale, PA 15086, USA, postmarked no later than June 2, 2004. A \$50 processing fee will be charged on all cancellations. NO refunds will be issued after the deadline date.

TECHNICAL SESSIONS

The Electronic Materials Conference technical program will commence at 8:30 am on Wednesday, June 23. All sessions will be held on grounds at the University of Notre Dame in DeBartolo Hall.

Session and paper titles are included in this brochure.

For technical program information regarding the 2004 TMS Electronic Materials Conference, please contact:

April S. Brown, EMC General Chair
Duke University
130 Hudson Hall
Durham, NC 27708
Tel: (919) 660-5442
Fax: (919) 660 5293
E-mail: abrown@ee.duke.edu

Or

Edward Yu, EMC Program Chair
University of California, San Diego
ECE Dept MC 0407
9500 Gilman Dr
La Jolla, CA 92093
Tel: (858) 534-6619
Fax: (858) 822-3425
E-mail: ety@ece.ucsd.edu

GENERAL INFORMATION

LATE NEWS PAPERS

Late News Papers will be considered. Authors must submit 5 copies of their abstract by June 2, 2004, to the Program Chair. Authors of accepted papers will be notified before the conference.

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.

COMPUTER/NETWORK FACILITIES

Registrants will have access to Notre Dame's information technology infrastructure, which includes more than 500 workstations in 12 computer clusters, and the *ResNet* Ethernet network providing internet access to all campus dorm rooms and several public areas. A temporary username and password will be provided to registrants upon check-in. Each technical session room has a video projector, a VGA connection for a laptop, and a Windows workstation equipped with CD and floppy disk drives, Microsoft PowerPoint and Adobe Acrobat software.

MESSAGES

Telephones and a message board will be located near the Registration Desk in McKenna Hall. Messages will be posted in this area throughout the conference.

RECREATION

Notre Dame's recreational facilities are available to conference guests. Conference nametags must be worn at all times and room keys must be presented in order to use the recreational facilities. Golf, swimming, racquetball, basketball, squash, weight lifting and tennis facilities are available. Current schedules and reservation information will be available in your conference packet. Walking and jogging route maps with distances are also available at the Information Desk in the Center for Continuing Education, McKenna Hall. For further facility information see <http://www.nd.edu/~recsport>.

GENERAL INFORMATION

DRESS

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

CAMPUS SMOKING POLICY

The University of Notre Dame prohibits smoking in its buildings, including residence halls. Smoking is allowed only in designated areas outside buildings.

STUDENT TRAVEL ASSISTANCE

Student authors who plan to present a paper at the 2004 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 2, 2004 to:

April S. Brown, EMC General Chair
Duke University
130 Hudson Hall
Durham, NC 27708
Tel: (919) 660-5442
Fax: (919) 660 5293
E-mail: abrown@ee.duke.edu

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

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 attendees of EMC requiring specific equipment or services indicate their needs on the enclosed housing form or by contacting the TMS Meeting Services Department.

GENERAL INFORMATION

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.

FOR MORE INFORMATION

Regarding conference logistics, please contact:

Michael Packard, CMP
Manager, Meeting Services
TMS
184 Thorn Hill Road
Warrendale, PA 1508
Tel: (724) 776-9000 ext. 225
Fax: (724) 776-3770
E-mail: packard@tms.org

Regarding meeting registration and pricing, please contact:

TMS Meeting Services
184 Thorn Hill Rd
Warrendale, PA 15086
Tel: (724) 776-9000 ext. 243
Fax: (724) 776-3770
E-mail: mtgserv@tms.org

Pertaining to the Device Research Conference, please contact:

Pallab Bhattacharya, DRC General Program Chair
University of Michigan
Dept of Electrical Engrg & Computer Science
1301 Beal Ave
Ann Arbor, MI 48109-2122
Tel: (734) 763-6678
Fax: (734) 763-9324
E-mail: pkb@eecs.umich.edu

GENERAL INFORMATION

Or

Alan Seabaugh, DRC Technical Program Chair
University of Notre Dame
266 Fitzpatrick Hall
Notre Dame, IN 46556
Tel: (574) 631-4473
Fax: (574) 631-4393
E-mail: seabaugh.1@nd.edu

THE EXHIBITION

The 2004 EMC will host an exhibition of electronic materials technology and related services. Exhibitors are invited to display equipment, instrumentation, products, software, publications and services relating to electronic materials science, industry and research.

The Exhibition will provide an ideal opportunity for EMC attendees to meet suppliers of related products and technology, and for attendees to acquaint themselves with new technologies and products.

Technical session participants are encouraged to visit the exhibition. The exhibition features:

- Show hours scheduled to complement the technical program schedule
- Conference coffee break conducted in the exhibition area
- A Welcoming cocktail reception held in the exhibit area on the opening day of the meeting
- Booth area conveniently located near the technical session rooms

EXHIBIT DATES AND HOURS

Wednesday, June 23, 2004.....9:20 am-4:00 pm
and 6:00 pm-8:00 pm
Thursday, June 24, 200410:00 am-4:00 pm

THE EXHIBITION

EXHIBITOR PRODUCTS AND SERVICES AT A GLANCE

- Advanced thin-film characterization
- Chemical Vapor Deposition (CVD)
- Compound semiconductor materials
- Failure analysis
- GaAs and InP based epitaxial wafers; substrates
- High performance purification
- High purity metalorganics
- III-V materials
- Materials characterization
- MOCVD
- Optoelectronics
- Sapphire substrates
- Scanning probe & electron microscopes
- Silicon heterostructures
- Ultra high purity (UHP) metals, gas & chemical delivery systems
- Wafer processing equipment
- Wide bandgap semiconductors

YOUR EXHIBITION FEE INCLUDES

- One-eight foot table
- Two-chairs
- Standard electrical service
- Complimentary listing in the show directory Distributed to all meeting registrants
- One complimentary registration to the technical sessions and exhibits
- Hosted welcoming reception in the Exhibition area
- Hosted coffee and refreshment breaks in the Exhibition Area
- Post-show report of meeting participants
- Exhibition management services

COMPANIES WHO HAVE RESERVED SPACE TO DATE INCLUDE

- Accelrys
- Aldrich Chemical Co., Inc.
- Jobin Yvon Inc.
- Johnson Matthey
- Kluwer Academic Publishers
- MMR Technologies Inc
- NOVOCONTROL America Inc
- United Minerals & Chemical Corp
- Veeco Instruments
- Wafer Technology Ltd.

THE EXHIBITION

To reserve space for the 2004 EMC Exhibition, simply complete and return the enclosed Exhibition and Sponsorship Reservation Form. To allow sufficient time for advance planning and promotion, prospective exhibitors are encouraged to return the reservation form no later than June 1, 2004.

SPACE RESERVATIONS WILL BE ACCEPTED ON A FIRST-COME-FIRST-SERVED BASIS.

CORPORATE SPONSORSHIP

As the exclusive sponsor of one of the following activities at the Electronic Materials Conference, you will be given the opportunity to showcase your company name and logo to ALL conference and exhibit attendees! Each opportunity provides you with exclusive name/logo recognition as follows:

- Signage
- Web site recognition
- In conference promotional materials
- Conference program recognition

PROPOSED SPONSOR ACTIVITIES

- Welcoming Reception
- Coffee Breaks
- Continental Breakfast
- Conference Social Event/Banquet

For more information on the exhibition or sponsorship opportunities, please contact:

Cindy A. Wilson
Exhibits Coordinator
TMS
184 Thorn Hill Rd
Warrendale, PA 15086
Tel: (724) 776-9000 ext 231
Fax (724) 776-3770
E-mail: wilson@tms.org

HOUSING & ACCOMMODATIONS

ON-CAMPUS HOUSING ACCOMMODATIONS

We are pleased to invite EMC attendees to reside on the campus of the University of Notre Dame. Notre Dame is a summer tourist area and accommodations can be difficult to secure. Therefore, early registration and reservations are essential. On-campus accommodations will be available on a first request basis in an air-conditioned residence hall within an easy walk from the technical session area. Accommodations are single occupancy dormitory each with its own sink. Common shower and restroom facilities are designated for men and women on each floor. Guests may wish to bring a robe and shower thongs. Linen service for towels and bed sheets will be provided, however washcloths are not. Calling card accessible phones are available within the residence hall lobbies. Conference attendees bringing personal computers with Ethernet connectivity can enjoy free internet access through *ResNet*, Notre Dame's high-speed network wiring in every dorm room and several public areas on campus (cable with RI-45 connector required). Working telephone instruments are not provided in residence hall rooms. Wake-up service is not available, so you may wish to bring an alarm clock.

Please also check the hotel listings in the Off-Campus Housing section of this brochure.

The University of Notre Dame offers the following package plans to provide planning flexibility and the option to attend both DRC and EMC. Residence hall package plans C, D, and E include full meal service. Residence hall room packages without meals are not available. No adjustments from the chosen package for lodging or meals will be made for late arrival or early departure.

Please indicate your plan preference on the enclosed reservation form and return it with your payment to:

DRC/EMC
Center for Continuing Education
115 McKenna Hall
Notre Dame, IN 46556
Tel: (574) 631-6691
Fax: (574) 631-8083
E-mail: cce@nd.edu

Reservations should be received at the University by May 19, 2004. Prepayment is required.

HOUSING & ACCOMMODATIONS

METHOD OF PAYMENT

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

- Check or Money Order. Checks must be drawn on a U.S. Bank and made payable to "The University of Notre Dame, CCE"
- Credit Card: Visa, MasterCard, American Express, Discover

PLAN C

(for those planning to attend DRC and EMC)
Includes lodging Sunday through Thursday night and the following 13 meals:

Sunday.....dinner
Mondaybreakfast, lunch, and dinner
Tuesday breakfast and lunch
(no dining commons meal offered Tuesday night due to the DRC Banquet)
Wednesdaybreakfast, lunch, and dinner
Thursday..... breakfast and lunch
(no dining commons meal offered Thursday night due to the EMC Banquet)
Fridaybreakfast and lunch

NOTE: This package includes dinner on your arrival day.

-- Per person \$330.00

PLAN D

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

Tuesday dinner
Wednesdaybreakfast, lunch, and dinner
Thursday..... breakfast and lunch
(dinner at the Century Center in downtown South Bend included with EMC registration - no dining commons meal offered)

Fridaybreakfast and lunch

-- Per person \$200.00

HOUSING & ACCOMMODATIONS

PLAN E

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

- Wednesday lunch and dinner
Thursday..... breakfast and lunch
*(dinner at the Century Center
in downtown South Bend
included with EMC registration
- no dining commons meal offered)*
Friday breakfast and lunch
-- Per person \$145.00

EARLY ARRIVAL

Saturday Night (June 19) Room Rate.

NOTE: No meals are included with prices. Cash will be accepted in the dining hall.

-- \$38.00

LATE DEPARTURE

Friday Night (June 25) Room Rate.

NOTE: Friday night and Saturday morning meals are not included with prices. Cash will be accepted in the dining hall. Checkout on Saturday is 10:00 am

-- \$38.00

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 Notre Dame.

NOTE: It is important to apply early.

- Three (3) lunches \$35.00
Five (5) lunches..... \$55.00

ON-CAMPUS DINING HOURS

Meals will be served in the South Dining Hall, conveniently located near the residence halls, during the following hours:

- Breakfast 7:00 am–8:00 am
Lunch 11:45 am–1:15 pm
Dinner..... 5:30 pm–7:00 pm

NOTE: Food facilities on campus close at 7:00 pm.

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

HOUSING & ACCOMMODATIONS

OFF-CAMPUS HOUSING ACCOMMODATIONS

Blocks of rooms have been reserved at special conference rates for the hotels listed below. Rooms will be released as early as May 31. Thereafter, reservations can be obtained only on a space available request. Please make your reservations directly with the hotel via mail, telephone, or fax as soon as possible. Rooms are available for DRC and EMC, Sunday through Thursday nights. You must identify yourself as either a DRC or EMC attendee. Friday or Saturday night are available, if requested at the time your reservation is made. However, the special rates below DO NOT apply to weekend rates. Friday and Saturday rates will be higher. Please note that the following rates DO NOT include tax.

The Morris Inn

Notre Dame Ave

Notre Dame, IN 46556

Located on the Notre Dame Campus,
directly across from the conference center.

www.themorrisinn.com

Tel: (574) 631-2000

Fax: (574) 631-2340

\$102.00-\$120.00 per night plus 12% tax

(Rate includes a full, hot breakfast of your choice in Sorin's Dining Room.)

The Inn at Saint Mary's

53993 US933

South Bend, IN 46637

Located on the campus of Saint Mary's College,
adjacent to the University of Notre Dame.

www.innatsaintmarys.com

Tel: (574) 232-4000

Fax: (574) 289-0986

\$99.00 per night plus tax

(Rate includes complimentary full hot breakfast.)

HOUSING & ACCOMMODATIONS

Holiday Inn – University Area

515 Dixieway N.
South Bend, IN 46637
Located 1 mile from the University of Notre Dame campus.
Tel: (574) 272-6600
Ask for Michelle Brown when making your reservations.
Fax: (574) 272-5553
\$69.95 per night plus tax

Best Inns of America

425 Dixieway N.
South Bend, IN 46637
Located 1/2 mile from the University of Notre Dame campus.
www.bestinn.com/
Tel: (219) 277-7700
Fax: (219) 277-2490
\$49.00 per night plus tax
(Rate includes complimentary continental breakfast.)

Jamison Inn

1404 North Ivy Road
South Bend, IN 46637
Located adjacent to Notre Dame campus
Tel: (574) 277-6500
Fax: (574) 271-0586
\$70.00 per night plus tax
(Rate includes full breakfast buffet.)

SOCIAL EVENTS

WELCOMING RECEPTION

All attendees are invited to attend a Welcoming Reception on Wednesday, June 23 from 6:00 pm-8:00 pm at the University of Notre Dame in DeBartolo Hall.

GREAT HALL OF THE CENTURY CENTER

On Thursday evening, June 24, conference attendees and their guests will have the opportunity to enjoy an evening by the St. Joseph River. Enjoy Century Center's location on a riverfront park in downtown South Bend. Its unique feature is the three-story Great Hall window. Century Center includes an art museum. The College Football Hall of Fame, one of the world's major sports shrines, connects to the Center by a dramatic concourse filled with the spirit of the sport. The College Football Hall of Fame is designed to put you in the middle of all the action. From your first step onto the Gridiron Plaza, to the moment you exit, you'll see the sport from every possible angle.

A catered dinner will take place in the Great Hall. After dinner, participants have the option of visiting the neighboring College Football Hall of Fame and/or the South Bend Regional Museum of Art. Admission fees are included. Bus transportation will be provided between the Century Center and the University of Notre Dame.

The cost of this event is included in full conference and student registration fees. It is not included in one-day registration fees. The cost of the conference banquet 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 for purchase at the EMC registration desk. Deadline for ticket sales will be 5:00 pm on Wednesday, June 23, 2004.

INFORMAL COFFEE BREAKS

During the intermission of morning and afternoon sessions (at approximately 10:00 am-10:40 am and 3:00 pm-3:40 pm) coffee, tea, and sodas will be served in DeBartolo Hall, the same location as the exhibits.

TRANSPORTATION

BY AIR

Notre Dame is about 15 minutes from South Bend Regional Airport (Ask your travel agent to book you to South Bend, Indiana). From the airport take "Lincolnway West" East (Left out of the airport) to downtown South Bend. Turn Left on Indiana 933 (Michigan St.). Stay on Indiana 933 to Angela Boulevard which is the second stop light north of the St. Joseph River. Turn right onto Angela Boulevard then left at the first stop light onto Notre Dame Avenue. Visitor Parking is located on the right side of Notre Dame Ave about 200 yards from Angela.

You can also fly to Chicago and drive or take a limousine. The university is about 2 hours (by car) from O'Hare airport, less to Midway. From O'Hare Airport: Take Route 190 east out of O'Hare to Route 90 east (Kennedy Expressway) toward downtown Chicago where it merges with Route 94 south (Dan Ryan Expressway). Take the Skyway exit off the Dan Ryan and remain on Route 90 to the Indiana Toll Road which eventually merges with Route 80. Get off at Exit 77 (South Bend/Notre Dame).

BY CAR

From the north: The University is located just south of the Indiana Toll road (Interstate 80/90). Exit Interstate 80/90 at exit 77 and turn right onto Michigan (Indiana 933). Make a left at the 4th stop light (Angela Boulevard). Make a left at the first stop light (Notre Dame Avenue). Visitor Parking is located on the right side of Notre Dame Ave about 200 yards from Angela.

From the south: Take US 31 north which becomes Indiana 933 just south of South Bend. Stay on Indiana 933 to Angela Boulevard which is the second stop light north of the St. Joseph River. Turn right onto Angela Boulevard then left at the first stop light onto Notre Dame Avenue. Visitor Parking is located on the right side of Notre Dame Ave about 200 yards from Angela.

BY TRAIN

The South Shore Line trains run directly from the Chicago Loop (corner of Michigan and Randolph) to

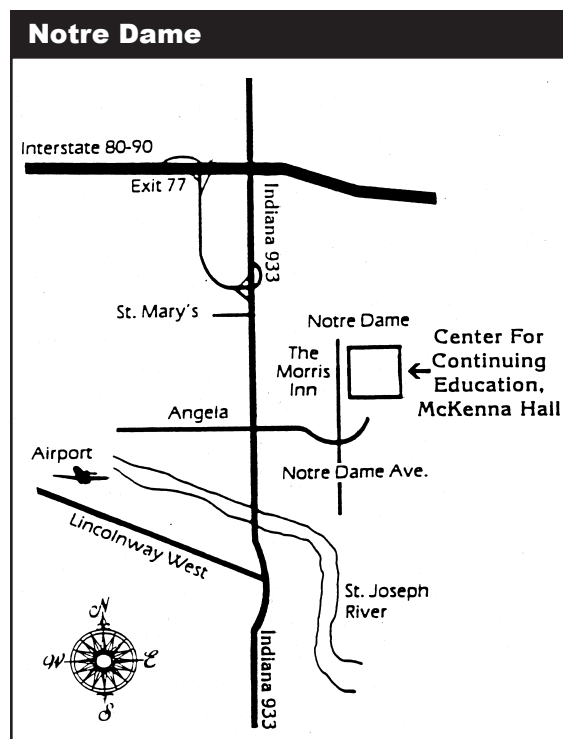
TRANSPORTATION

South Bend Regional Airport in South Bend. From the airport, the Notre Dame campus is approximately a 15 minute ride. Various transportation methods are available (ie. taxi, rental car, limo). For detailed driving directions see the "By Air" section above.

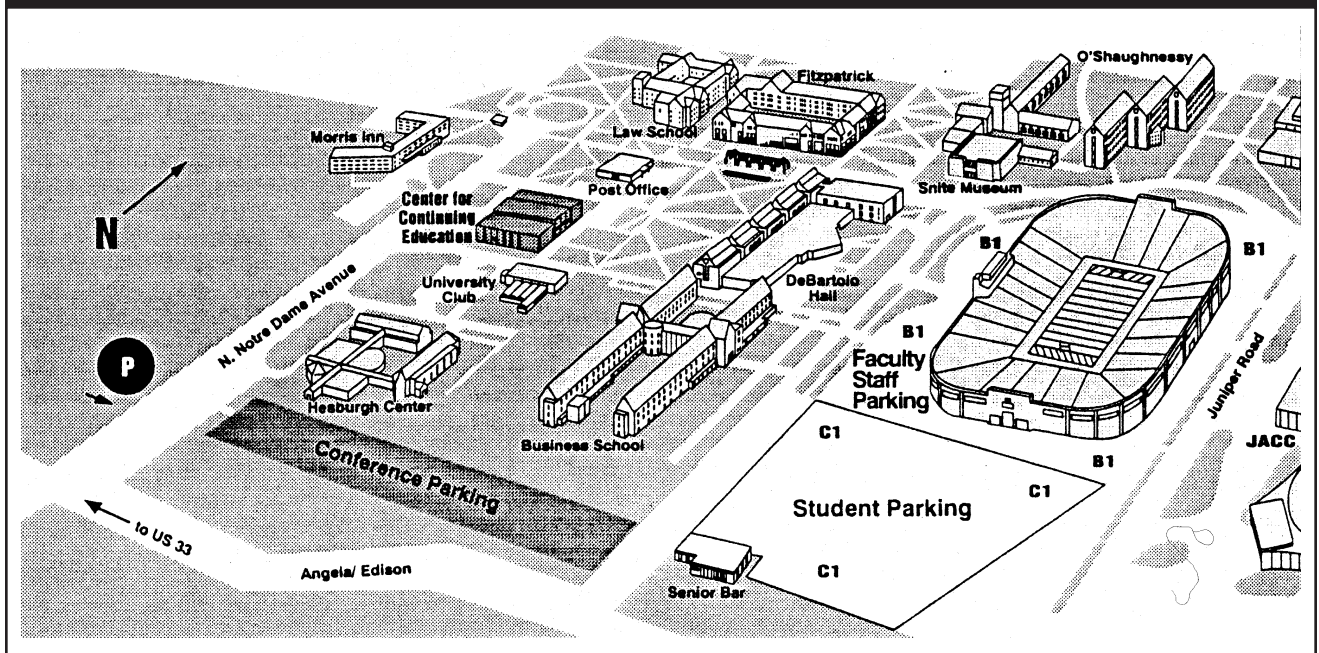
PARKING

Guests staying in a Notre Dame Residence Hall will be directed to appropriate parking after unloading at the assigned Residence Hall. The parking lot of the Morris Inn is restricted to overnight and dining guests of the Inn.

Visitor parking is permitted in the parking lot south of the Hesburgh Center, off Notre Dame Avenue. Coupons to exit the lot (\$1.00 each) are available at the Information Desk of the Center for Continuing Education (CCE) in McKenna Hall. The parking fee is not included in the cost of housing. Cars parked illegally are subject to ticketing and towing. Parking for handicapped guests with appropriate license designations is located in the drive, north of the CCE.



University Campus



ATTENTION

TMS NON-MEMBER ATTENDEES

Membership offer for new members!

Become a TMS Member today and pay only \$54 for the remainder of 2004. Discover a wealth of information on electronic materials and resultant devices.

Plus, enjoy all of the benefits that TMS Membership has to offer, including:

- A print and electronic subscription to *JOM*, the magazine that explores the traditional, innovative, and revolutionary issues in the minerals, metals, and materials fields.
- A members-only discount on an individual subscription to *JEM*, a joint TMS and IEEE publication.
- Free electronic subscription to *TMS Letters*, a peer reviewed journal consisting of two-page technical updates of research presented at TMS meetings but not published elsewhere.
- Networking opportunities with a prestigious membership through international conferences.

- Discounts on TMS publications and conference fees.
- Access to the TMS organizational network through the searchable OnLine Membership Directory.
- Plus an array of other membership benefits and services.

Once you have been a part of all that TMS has to offer, you'll want to continue your membership long into the future.

To become a member of TMS, complete a TMS application and return it to the TMS Registration Desk during the conference, along with your \$54 membership fee. Or, you may opt to mail your application and payment to TMS Headquarters, 184 Thorn Hill Road, Warrendale, PA 15086, USA. You may also join via the TMS website at www.tms.org/Society/membership.html. For more information, visit the TMS website or contact the TMS Membership Department at membership@tms.org or (724) 776-9000 ext. 241.

Students living in North America can apply for a Joint ASM/TMS Joint Student Membership for \$25. Students living outside North America may apply for TMS Student Membership for \$15.

CAR RENTAL SPECIAL



HERTZ RENT-A-CAR SYSTEM...

has been selected as the Official Car Rental Company for the 46th Annual EMC in Notre Dame, Indiana.

Meeting rates listed below, with free unlimited mileage, are guaranteed one week before through one week after the actual meeting dates and are subject to car availability. Rates are available from all Indiana locations.

Advance reservations may be made by booking online at www.hertz.com or calling the Hertz reservations line at 1-800-654-2240 in the US; 1-800-263-0600 in Canada; International - contact your nearest Hertz reservation center or call +1-405-749-4434. You must give the reservations agent the Hertz CV# to receive the special rates. Advance reservations are recommended.

Identify yourself as an attendee of EMC and reference the following CV number: CV#02QJ0009.

Car Class	DAILY Per Day	WEEKEND Per Day	WEEKLY 5-7 Days
A Economy	\$46.99	\$22.99	\$189.99
B Compact 4DR	\$51.99	\$25.99	\$204.99
C Midsize	\$55.99	\$27.99	\$219.99
D Special Sporty	\$57.99	\$32.99	\$234.99
F Full-size 4DR	\$60.99	\$34.99	\$249.99
G Premium	\$65.99	\$39.99	\$259.99
I Towncar	\$79.99	\$63.99	\$346.99
L 4WD/AWD SUV	\$79.99	\$63.99	\$346.99
R Minivan 2WD	\$82.99	\$65.99	\$354.99
U Convertible	\$79.99	\$63.99	\$346.99

TERMS AND CONDITIONS

- UNLIMITED MILEAGE ALLOWANCE ON ABOVE RATES.
- One-way service fee will apply when cars are not returned to renting location.
- Additional daily charges for optional coverage (Loss Damage Waiver, Personal Accident Insurance, Personal Effect Protection, refueling and state tax) are not included in the above rates.
- Drivers must meet standard Hertz age, driver, and credit requirements.
- Hertz is a frequent flyer partner with US Airways, Delta, Northwest, United, and American Airlines. Frequent flyer information may be requested at time of car booking.
- Weekly rentals are from five to seven days.
- Weekend rentals are available for pick-up between noon Thursday and noon Sunday and must be returned no later than Monday at 11:59pm.
- Thursday pick-up requires a minimum three-day keep, Friday pickup requires a minimum two-day keep, and Saturday/Sunday pickups require a minimum one-day keep.

SPECIAL AIRFARE



U-S AIRWAYS

OFFICIAL CARRIER OF THE 46TH ANNUAL EMC

US Airways agrees to offer an exclusive low rate for attendees traveling to the 2004 TMS Electronic Materials Conference in Notre Dame, Indiana. Offer applies to flights on US Airways via Chicago, Illinois and South Bend, Indiana.

This special fare will offer a 7% discount off First or Envoy Class and any published US Airways promotional round trip fare via Chicago. A 12% discount on unrestricted coach fares will apply with seven-day advance reservations and ticketing required via Chicago. US Airways will offer a 5% discount off First or Envoy Class and any published US Airways promotional round trip fare and a 10% discount on unrestricted coach fares with seven-day advance reservations and ticketing via South Bend. Plan ahead and receive an additional discount by ticketing 60 days or more prior to departure. These discounts are valid provided all rules and restrictions are met and are applicable for travel from all points on US Airways' route system. The above discounts are not combinable with other discounts or promotions, and are valid three days before and after the meeting dates. Additional restrictions may apply on international travel.

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AWARDS

STUDENT AWARDS

The top 5% of student papers at the Electronic Materials Conference will receive this award. Award winning students receive \$500 given by the Electronic Materials Committee. Student papers will be judged on both scientific content and oral presentation at the conference.

Awards will be presented during the plenary session on Wednesday, June 23.

JOHN BARDEEN AWARD

2004 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: Russell D. Dupuis

Citation: For the pioneering demonstration of high-quality III-V semiconductor materials and devices grown by metalorganic chemical vapor deposition.

Russell D. Dupuis is the Steve W. Chaddick Chair in Electro-Optics and Georgia Research Alliance Eminent Scholar at the Georgia Institute of Technology. He was professor and Judson S. Swearingen Regents Chair in Engineering at the University of Texas at Austin from 1989 until August 2003. He was elected to



the National Academy of Engineering in 1989 and has been named fellow of the Institute of Electrical and Electronics Engineers and fellow of the Optical Society of America.

Dr. Dupuis has authored or co-authored over 260 refereed technical papers published in various technical journals and has given numerous contributed and invited technical papers at conferences throughout the world. He has consulted for several major U.S. companies dealing in advanced III-V devices and materials.

"I deem it indeed a great honor to be selected to receive the TMS John Bardeen award for many reasons, most importantly, the fact that this award was

AWARDS

established to honor one of the greatest scientists and engineers of the past century, Dr. John Bardeen. I knew Dr. Bardeen when I was a graduate student at The University of Illinois, Urbana-Champaign during the period 1969–1973. I am also honored because this prestigious prize has also been received by others whose work I greatly admire and whom I know personally, including John Goodenough, Nick Holonyak, Jr., and Morton B. Panish.

I am honored to receive this award because of the outstanding quality of the work of all of those who have preceded me in receiving this prize. I believe that Dr. Bardeen would appreciate the fact that this prize has been given previously by TMS to these individuals who have made a big difference in the science and technology of semiconductor materials and who have made this prize important by the quality of their work."

NOMINATIONS ARE NEEDED!

You are encouraged to submit a nomination for the TMS 2006 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.

For award criteria and additional information, pick up a nomination form at the TMS Registration desk at EMC, or you may download the nomination form from the TMS website at <http://www.tms.org/Society/honors.html>.

PUBLICATION INFORMATION



The Electronic Materials Conference publishes no formal conference proceedings, but conference abstracts will be published in the *Journal of Electronic Materials (JEM)*.

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 EMC and welcomes the submission of related electronic materials articles by EMC presenters and attendees.

Articles that appear in *JEM* are reviewed, selected, and edited by peers in the field who serve as volunteer members of the editorial board, the board of associate editors, or section editors. *JEM* employs an online manuscript submission and review system. To be considered for publication in *JEM*, authors must submit their manuscripts electronically through the following web site: <http://jem.electronicipc.com>. Detailed manuscript submission guidelines are available from the *JEM* website at <http://www.tms.org/jem.html>.

TMSLETTERS

Beginning this year, EMC participants also have the opportunity to publish through a new journal, *TMS Letters*. Timely, relevant, and rigorously reviewed, *TMS Letters* is a unique technical journal that presents cutting-edge research in succinct, informative technical updates. The peer-reviewed journal will be available exclusively in on-line format through the TMS Document Center and will be accessible free-of-charge to all TMS members as a benefit of membership (nonmembers may subscribe for a fee). The editor of *TMS Letters* is Dan Thoma, 2003 president of TMS and technical staff member of Los Alamos National Laboratory.

TMS Letters will be composed entirely of two-page technical updates, including text and graphics, of research presented at TMS meetings that are not published in any other book or journal. Presentations that are to be considered for publication must be submitted via the TMS Conference Management System (CMS) in portable document format. Complete author instructions are available through the *TMS Letters* homepage, <http://www.tms.org/TMSLetters.html>. Manuscripts can be submitted through CMS at <http://cms.tms.org>.

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SUBSCRIPTION INFORMATION

The *Journal of Electronic Materials* 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.

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.

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THURSDAY, JUNE 24, 2004

Registration	7:30 AM – 4:00 PM
Location	McKenna Hall
Exhibition.....	10:00 AM – 4:00 PM
Location	DeBartolo Hall
Conference Banquet.....	6:00 PM – 8:00 PM
Location	Great Hall of the Century

SESSIONS

<i>Session Q.</i> High-K Oxides.....	8:20AM
<i>Session R.</i> Nanotubes and Nanowires I.....	8:20AM
<i>Session S.</i> Physics and Devices in Low Dimensional Structures.....	8:20AM
<i>Session T.</i> Molecular Electronics I.....	8:20AM
<i>Session U.</i> III-Nitride Growth	8:20AM
<i>Session V.</i> Surface Engineering and Thin-Film Transistor Performance	8:20AM
<i>Session W.</i> Mismatched Materials: Metamorphic and Growth on Templates	8:20AM
<i>Session X.</i> Spin Injection, Spin Transport and Magnetic Anisotropy.....	1:30PM
<i>Session Y.</i> Nanotubes & Nanowires II	1:30PM
<i>Session Z.</i> Semiconductor Nanostructures: Materials to Devices	1:30PM
<i>Session AA.</i> Dilute Nitrides.....	1:30PM
<i>Session BB.</i> Contacts to Wide Bandgap Semiconductors	1:30PM
<i>Session CC.</i> Transport in Organic Semiconductor Device.....	1:30AM
<i>Session DD.</i> Narrow Bandgap Devices and Materials	1:30PM

FRIDAY AM, June 25, 2004

Registration	7:30 AM-10:00 AM
Location	McKenna Hall

SESSIONS

<i>Session EE.</i> Epitaxy for Devices.....	8:20 AM
<i>Session FF.</i> Defects in SiC	8:20 AM
<i>Session GG.</i> Semiconductors: Processing and Oxidation.....	8:20 AM
<i>Session HH.</i> Molecular Electronics II.....	8:20 AM
<i>Session II.</i> Characterization of Nitride Semiconductors.....	8:20 AM
<i>Session JJ.</i> Contacts to Nanotubes, Nanowires and Organic Films.....	8:20 AM

2004 Electronic Materials Conference

EMC Plenary Lecture/Student Awards

Ceremony: 8:20 AM

Room: 101

Plenary Speaker: Federico Capasso, Harvard University,
Cambridge, MA 02138 USA

Topic: *To Be Announced*

Break: 9:20 AM - 10:00AM

Joint DRC/EMC Invited Session: Molecular Electronics and Carbon Nanotubes

Wednesday AM Room: 101
June 23, 2004 Location: DeBartolo Hall

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

10:00 AM Invited

**Characterization of Silicon-Based Molecular Resonant
Tunneling Diodes with Scanning Tunneling Microscopy:**
N. P. Guisinger¹; R. Basu¹; M. E. Greene¹; A. S. Baluch¹; M.
C. Hersam¹; ¹Northwestern University, Dept. of Matls. Sci.
& Engrg., 2220 Campus Dr., Evanston, IL 60208-3108
USA

10:40 AM Invited

**IR Emission from Schottky Barrier Carbon Nanotube
FETs:** R. Martel¹; J. Misewich²; J.C. Tsang³; Ph. Avouris³;
¹Université de Montréal, C.P. 6128 Succursale Centre-
Ville, Montréal, H3C-3J7 Canada; ²Brookhaven National
Lab, Matls. Sci. Dept., Upton NY 11973 USA; ³IBM T.
J. Watson Research Center, Kitchewan Rd., Yorktown
Heights, NY 10598 USA

11:20 AM Invited

**Measurement of Electron Transport and Mechanical
Properties of Single Molecules:** Nongjian Tao¹; Bingqian
Xu¹; Xiaoying Xiao¹; ¹Arizona State University, Dept. of
Elect. Engrg. & Ctr. for Solid State Elect. Rsch., Tempe,
AZ 85287 USA

Joint DRC/EMC Session: Materials and Circuits for Flexible Electronics

Wednesday PM Room: 101
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Vitaly Podzorov, Rutgers University, Piscataway, NJ 08854 USA; Alberto Salleo, Palo Alto Research Center, Palo Alto, CA 94306 USA

1:30 PM Invited

Nanowire Thin-Films: A New Electronic Materials Technology for Thin-Film Devices and High-Performance Large-Area Electronics: *Stephan Empeocles*¹; ¹Nanosys, Inc., 2625 Hanover St., Palo Alto, CA 94304 USA

2:10 PM Invited

Abstract not available

2:50 PM

Digital Lithography for Thin-film Transistor Fabrication: *William S. Wong*¹; Rene Lujan¹; Steven E. Ready¹; Michael L. Chabiny¹; Ana Claudia Arias¹; Robert A. Street¹; ¹Palo Alto Research Center, 3333 Coyote Hill Rd., Palo Alto, CA 94304 USA

3:10 PM Break

3:30 PM Invited

Pentacene Based Transponder Tags with Multiple-Bit Circuitry: *Paul Baude*¹; David Ender¹; Michael Haase¹; Tommie Kelley¹; Dawn Muyres¹; Steven Theiss¹; ³M, CRML, 201-1N-35, St. Paul, MN 55144 USA

4:10 PM

Hole Mobility in Organic Single Crystal Field Effect Transistors: Claudia Goldmann¹; Cornelius Krellner¹; Kurt P. Pernstich¹; Simon Haas¹; *David J. Gundlach*¹; Bertram Batlogg¹; ¹Laboratory for Solid State Physics, ETH Zurich, HPF-F9, Zurich 8093 Switzerland

4:30 PM

An 8V Organic Complementary Logic Process for Flexible Polymeric Substrates: Hagen Klauk¹; Marcus Halik¹; Ute Zschieschang¹; Florian Eder¹; Günter Schmid¹; Christine Dehm¹; ¹Infineon Technologies, New Memory Platforms, Mats. & Tech., 91052 Erlangen, Germany

Session A: High-K Dielectric Stacks

Wednesday AM Room: 102
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Susanne Stemmer, University of California, Mats. Dept., Santa Barbara, CA 93106-5050 USA; Vijay Narayanan, IBM SRDC, T. J. Watson Rsch. Ctr., Yorktown Heights, NY 10598 USA

10:00 AM Invited

A1, New Metal Gate/High-K Dielectric Stacks for Continual Electrical T_{ox} Scaling and High-Performance CMOS Applications: *Robert Chau*¹; Suman Datta¹; Mark Doczy¹; Jack Kavalieros¹; Matthew Metz¹; ¹Intel Corporation, Components Rsch., Logic Tech. Dvlp., 5200 N.E. Elam Young Pkwy., MS RA3-252, Hillsboro, OR 97124 USA

10:40 AM Student

A2, Electron Spin Resonance Study of Atomic Layer Deposited HfO₂ on (111) Silicon: *J. P. Campbell*¹; P. M. Lenahan¹; R. Puthenkovilakam²; J. P. Chang²; ¹Pennsylvania State University, Dept. of Engrg. Sci. & Mechanics, 212 Earth & Engrg. Sci. Bldg., Univ. Park, PA 16802 USA; ²University of California, Dept. of Chem. Engrg., Boelter Hall Rm. 5531, Los Angeles, CA 90095 USA

11:00 AM

A3, Origin of a Residual Charge and Effects of Nitridation of High-k Oxides in MOSFETS: Density Functional Studies: *Jacob Gavartin*¹; Adam S. Foster²; Alexander L. Shluger¹; Genadi Bersuker³; ¹University College London, Dept. of Physics & Astron., Gower St., London WC1E 6BT UK; ²Helsinki University of Technology, Lab. of Physics, PO Box 1100, Helsinki FIN-02015 Finland; ³International Sematech, Austin, TX 78741 USA

11:20 AM Student

A4, Negative Bias-Temperature Instabilities in Metal-Oxide-Silicon Devices with SiO₂ and SiO_xN_y/HfO₂ Gate Dielectrics: *Xing J. Zhou*¹; Sergery N. Rashkeev²; Leonidas Tsetseris²; Daniel M. Fleetwood¹; Ronald D. Schrimpf¹; Sokrates T. Pantelides²; Felix A. James³; Evgeni P. Gusev⁴; C. D'Emic⁴; ¹Vanderbilt University, Elect. Engrg. Computer Sci., VU Sta. B 351825, Nashville, TN 37235-1683 USA; ²Vanderbilt University, Physics & Astron., Dept. of Physics & Astron., Nashville, TN 37235 USA; ³Sandia National Laboratories, PO Box 5800, Albuquerque, NM 87185-1083 USA; ⁴IBM Semiconductor Research and Development Center, IBM Thomas J. Watson Rsch. Ctr., Yorktown Heights, NY 10598 USA

11:40 AM

A5, Si and SiGe Vertical MOSFETs with CVD-HfO₂ Gate Dielectric: *Sankaran Kartik Jayanarayanan*¹; Weiping Bai¹; Dim-Lee Kwong¹; Sanjay Kumar Banerjee¹; ¹University of Texas, Elect. & Computer Engrg., 10100 Burnet Rd., Bldg. 160, Austin, TX 78758 USA

Session B: Magnetic Semiconductors: Growth and Characterization

Wednesday AM Room: 141
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Nitin Samarth, Pennsylvania State University, Physics Dept., University Park, PA 16802 USA; Margaret Dobrowolska, University of Notre Dame, Dept. of Physics, Notre Dame, IN 46556 USA

10:00 AM

B1, Point Contact Andreev Reflection Spin Polarization Measurements in InMnSb Epilayers: *B. Nadgorny*¹; R. P. Panguluri¹; T. Wojtowicz²; W. L. Lim²; X. Liu²; J. K. Furdyna²; ¹Wayne State University, Physics, 666 W. Hancock, Detroit, MI 48201 USA; ²University of Notre Dame, Physics, Notre Dame, IN 45556 USA

10:20 AM Student

B2, Structural and Magnetic Properties of Cr-Doped InN Films Grown by Plasma-Assisted MBE: *Rekha Rajaram*¹; Glenn Solomon²; R. F.C. Farrow³; J. S. Harris⁴; S. S.P. Parkin³; ¹Stanford University, Matls. Sci., Ctr. for Integrated Sys., CISX 126X, Via Ortega, Stanford, CA 94305 USA; ²CBL Technologies Inc., 2682 Middlefield Rd., Ste. I, Redwood City, CA USA; ³IBM Almaden Research Center, San Jose, CA 95120 USA; ⁴Stanford University, Solid State and Photonics Lab, Stanford, CA 94305 USA

10:40 AM Student

B3, Single Crystals of $Zn_{1-x}Mn_xO$ and $Zn_{1-x}Co_xO$ for Spintronic Applications: *Matthew H. Kane*¹; Varatharajan Rengarajan²; Christy Vestal³; Kandoor Shalini¹; John Zhang³; Jeffrey Nause²; Christopher Summers¹; Ian T. Ferguson⁴; ¹Georgia Institute of Technology, Sch. of Matls. Sci. & Engrg., Atlanta, GA 30332-0245 USA; ²Cermet Inc., 1019 Collier Rd., Ste. C, Atlanta, GA 30318 USA; ³Georgia Institute of Technology, Sch. of Chmst. & Biochmst., Atlanta, GA 30332-0400 USA; ⁴Georgia Institute of Technology, Sch. of Elect. & Computer Engrg., Atlanta, GA 30332-0250 USA

11:00 AM Student

B4, Local Structure about Mn Ions in III-Mn-V Ferromagnetic Semiconductor Alloys: *Aaron M. Stuckey*¹; Igor de Vasconcelos¹; Tomasz Wojtowicz¹; Xinyu Liu¹; Jacek Furdyna¹; B. A. Bunker¹; ¹University of Notre Dame, 341 Nieuwland Sci. Hall, Notre Dame, IN 46556 USA

11:20 AM

B5, Strong Ferromagnetism in GaMnN Alloys Grown by MBE: *Joseph E. Van Nostrand*¹; John D. Albrecht²; ¹Air Force Research Lab, Matls. & Mfg. Direct., B620, 2241 Avionics Cir., Ste. 21, WPAFB, OH 45433-7322 USA; ²Air Force Research Lab, Sensors Direct., 2241 Avionics Cir., B620, WBAFB, OH 45433 USA

11:40 AM

B6, Late News

Session C: Materials Integration: Wafer Bonding and Alternative Substrates

Wednesday AM Room: 136
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Karl Hobart, Naval Research Laboratory, Washington, DC 20375 USA; Peter Moran, Michigan Technological University, Dept. of Chem. Engrg., Houghton, MI 49931 USA

10:00 AM

C1, UHV-Wafer Bonding of Heterostructure Semiconductor Materials Using Low Energy Hydrogen Ion Beam Surface Cleaning: *Razek Nasser*¹; Volker Gottschalch²; Axel Schindler¹; Bernd Rauschenbach¹; ¹Leibniz-Institute for Surface Modification, Dept. of Ion Beam Tech., Permoserstr. 15, Leipzig D-04303 Germany; ²University of Leipzig, Inst. of Anorganic Chmst., Linéstr. 3, Leipzig D-04103 Germany

10:20 AM Student

C2, Changes in Interfacial Bonding Energies in the Chemical Activation of GaAs Surfaces: *Ning Liu*¹; Thomas F. Kuech²; ¹University of Wisconsin, Matls. Sci. Prog., 1415 Engrg. Dr., Madison, WI 53706 USA; ²University of Wisconsin, Dept. of Chem. & Bio. Engrg., 1415 Engrg. Dr., Madison, WI 53706 USA

10:40 AM Student

C3, InGaAs Quantum Wells Grown by MOCVD on InP/GaAs Composite Substrates: *Sumiko Lynn Hayashi*¹; David Bruno¹; Rajinder Singh Sandhu²; Mike Wojtowicz²; Gangyi Chen³; Robert F. Hicks³; Mark S. Goorsky¹; ¹University of California, Dept. MSE, BH 2517, Los Angeles, CA 90095 USA; ²Northrop Grumman Space Technology, 1 Space Park Dr., Redondo Beach, CA 90278 USA; ³University of California, Dept. Chem. Engrg., Los Angeles, CA 90095 USA

11:00 AM

C4, Combined Use of Neon Ion Implantation and Hydrogen Plasma Implantation in Ion-Cutting: *Peng Chen*¹; Paul K. Chu¹; Bo Chen²; Alexander Usenko³; William Carr²; ¹City University of Hong Kong, Dept. of Physics & Matls. Sci., Tat Chee Ave., Kowloon Hong Kong; ²New Jersey Institute of Technology, Newark, NJ 07102 USA

11:20 AM Student

C5, High Resolution X-Ray Diffraction Characterization of the Depth Dependent Structural Transformations in HE-Implanted PZN-PT: *Natee Tangtrakarn*¹; M. Levy¹; P. D. Moran¹; ¹Michigan Technological University, Matls. Sci. & Engrg., 1400 Townsend Dr., Houghton, MI 49931 USA

11:40 AM

C6, Late News

Session D: SiC Growth and Device Processing

Wednesday AM Room: 138
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Robert Stahlbush, Naval Research Laboratory, Washington, DC 20375 USA; Michael Capano, Purdue University, Sch. of Elect. & Computer Engrg., W. Lafayette, IN 47907-1285 USA

10:00 AM

D1, Drift Free, 10 kV, 20A, 4H-SiC PIN Diodes: *Mrinal Kanti Das*¹; ¹Cree, Inc., Power R&D Advd. Devices, 4600 Silicon Dr., Durham, NC 27703 USA

10:20 AM Student

D2, Influence of Low Field Mobility Related Issues on SiC MESFET Performance: *Ho-Young Cha*¹; Y. Choi¹; L. F. Eastman¹; M. G. Spencer¹; L. Ardaravicius²; A. Matulionis²; O. Kiprijanovic²; ¹Cornell University, Elect. & Computer Engrg., 401 Phillips Hall, Ithaca, NY 14853 USA; ²Semiconductor Physics Institute, Vilnius Lithuania

10:40 AM

D3, 2.5 kV, 17 mOhms-cm² 4H-SiC JFETs: *Sei-Hyung Ryu*¹; Sumi Krishnaswami¹; James Richmond¹; James Scofield²; Anant Agarwal¹; John Palmour¹; ¹Cree, Inc, Silicon Carbide Power Devices, 4600 Silicon Dr., Durham, NC 27703 USA; ²Air Force Research Laboratory, PRPE, 1950 Fifth St., Wright-Patterson AFB, OH 45433-7251 USA

11:00 AM Student

D4, Characteristics of Trench-Refilled 4H-SiC P-N Junction Diodes Fabricated by Selective Epitaxial Growth: *Canhua Li*¹; Joseph Seiler¹; Pete Losee¹; Ishwara Bhat¹; T. Paul Chow¹; ¹Rensselaer Polytechnic Institute, ECSE Dept. & Ctr. for Integrated Elect., 110 8th St., Troy, NY 12180 USA

11:20 AM

D5, Modifications of 4H-SiC and 6H-SiC(0001) Surfaces by Atomic Hydrogen and Nitrogen for the Epitaxial Growth of GaN: *Maria Losurdo*¹; Maria M. Giangregorio¹; Pio Capezzuto¹; Giovanni Bruno¹; April S. Brown²; Tong-Ho Kim²; Changhyun Yi²; ¹IMIP-CNR, Plasma Chmst. Lab., Via oRabona, 4, Bari 70126 Italy; ²Duke University, Dept. of Elect. & Computer Engrg., 128 Hudson Hall, Durham, NC 27709 USA

11:40 AM

D6, Development of High Growth Rate (20 μ m/h) SiC Epitaxy in a Horizontal Hot-Wall CVD Reactor: *Jie Zhang*¹; Janice Mazzola¹; Jeff Wyatt²; Mike Mazzola²; Jeff Casady¹; ¹SemiSouth Laboratories, Inc., One Rsch. Blvd., Ste. 201B., Starkville, MI 39759 USA; ²Mississippi State University, Dept. of Elect. & Computer Engrg., Box 9571, Starkville, MI 39759 USA

Session E: Nitride HEMTs: Transport and Devices

Wednesday AM Room: 155
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Jim Speck, University of California, Dept. of Matls., Santa Barbara, CA 93106 USA; Mike Manfra, Lucent Technologies, Bell Labs., Murray Hill, NJ 07974 USA

10:00 AM

E1, A Study of AlGaN/GaN Heterostructures on Silicon: *S. Elhamri*¹; R. Berney¹; M. Ahoujja¹; W. C. Mitchel²; W. D. Mitchell²; J. C. Roberts³; P. Rajagopal³; T. Gehrke³; E. L. Piner³; K. J. Linthicum³; ¹University of Dayton, Dept. of Physics, 300 College Park, Dayton, OH 45469 USA; ²Air Force Research Laboratory, Matls. & Mfg. Direct., Wright-Patterson AFB, OH 45433-7707 USA; ³Nitronex Corporation, 628 Hutton St., Ste. 106, Raleigh, NC 27606 USA

10:20 AM

E2, Quantum Transport in a Tunable AlGaN/GaN Two-Dimensional Electron Gas: *Michael James Manfra*¹; Kirk Baldwin¹; A. M. Sergent¹; R. J. Molnar²; ¹Bell Laboratories, Semiconductor Physics Rsch., 700 Mountain Ave., 1D-368, Murray Hill, NJ 07974 USA; ²MIT Lincoln Laboratory, Lexington, MA USA

10:40 AM

E3, Use of Modulation Doped Superlattice AlGaN Barrier in GaN/AlGaN HFETs: *Uttiya Chowdhury*¹; Raymond Kirk Price²; Michael Wong³; Dongwon Yoo⁴; Xuebing Zhang¹; Milton Feng²; Russell D. Dupuis¹; ¹Georgia Institute of Technology, Sch. of Elect. & Computer Engrg., 778 Atlantic Dr., Atlanta, GA 30332-0250 USA; ²University of Illinois, Micro & Nanotech. Lab., 208 N. Wright, Urbana, IL 61801 USA; ³University of Texas, Microelect. Rsch. Ctr., 10100 Burnet Rd., Austin, TX 78758 USA

11:00 AM Student

E4, SiC Substrate Inclusions and Their Impact on AlGaN/GaN HEMT Performance: *Benjamin Poust*¹; Rajinder Sandhu¹; Benjamin Heying²; Ioulia Smorchkova²; Randy Hsing²; Michael Wojtowicz¹; Mark Goorsky¹; ¹University of California, Matls. Sci. & Engrg., 6531 Boelter Hall, 405 Hilgard Ave., Los Angeles, CA 90095-1595 USA; ²Northrop Grumman Space Technology, Space & Elect. Grp., Redondo Beach, CA 90278 USA

11:20 AM

E5, Suppression of Gate Current Leakage in AlGaN/GaN MIS-HFETs with Ultrathin Al₂O₃/Si₃N₄ Bilayer Insulator: *C. X. Wang*¹; N. Maeda¹; M. Hiroki¹; T. Tawara²; T. Saitoh²; T. Makimoto²; T. Kobayashi¹; T. Enoki¹; ¹NTT Incorporation, NTT Photonics Lab., 3-1, Morinosato, Wakamiya, Atsugi, Kanagawa 243-0198 Japan; ²NTT Incorporation, NTT Basic Rsch. Lab., 3-1, Morinosato, Wakamiya, Atsugi, Kanagawa 243-0198 Japan

11:40 AM

E6, Late News

Session F: Materials and Structures for Chemical and Biological Sensors

Wednesday AM Room: 126
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Tom Kuech, University of Wisconsin, Dept. of Chem. Engrg., Madison, WI 53706 USA; Laura Rea, US Air Force Research Laboratory, Wright Patterson AFB, OH 45433-7707 USA

10:00 AM

F1, Fabrication of a Solid-State Single Nanopore for DNA Characterization: *Hung Chang*¹; ¹Purdue University, Sch. of Elect. Engrg., 465 Northwestern Ave., PO 103, W. Lafayette, IN 47907-1285 USA

10:20 AM

F2, Chemical Sensing Properties of Modified Silicon Surfaces: *Brian J. Eves*¹; Tim R. Ward¹; Steve A. Mitchell¹; Gregory P. Lopinski¹; ¹National Research Council, Steacie Inst. for Molecular Scis., 100 Sussex Dr., Ottawa, Ontario K1A 0R6 Canada

10:40 AM

F3, Applications of Dielectrophoretic “Tweezers” in Determining the Biological Receptor-Ligand Interaction Forces and Selectively Removing Different Species in Biochips: *Haibo Li*¹; Rashid Bashir¹; ¹Purdue University, Sch. of Elect. & Computer Engrg., Dept. of Biomed. Engrg., 465 Northwestern Ave., EE322B, W. Lafayette, IN 47907 USA; ¹Purdue University, Elect. & Computer Engrg., 1285 EE Bldg., Mailbox 358, W. Lafayette, IN 47907 USA

11:00 AM Student

F4, Self-Assembled Protein Nanopatterns: *Bo Gao*¹; Wenchuang Hu²; Gary H. Bernstein²; Marya Lieberman¹; ¹University of Notre Dame, Dept. of Chmst. & Biochmst., Notre Dame, IN 46556 USA; ²University of Notre Dame, Dept. of Elect. Engrg., Notre Dame, IN 46556 USA

11:20 AM Student

F5, Electrical Detection of DNA Hybridization Using Nano-Gap Gold Break-Junctions: *Samir M. Iqbal*¹; Ganesan Balasundaram²; Subhasis Ghosh³; Donald E. Bergstrom²; Rashid Bashir¹; ¹Purdue University, Sch. of Elect. & Computer Engrg., 465 Northwestern Ave., W. Lafayette, IN 47907-1285 USA; ²Purdue University, Dept. of Medicinal Chmst. & Molecular Pharmacology, Arthur E. Hansen Bldg., W. Lafayette, IN 47907 USA; ³Jawaharlal Nehru University, Sch. of Physical Scis., New Delhi 110067 India

11:40 AM Student

F6, High Temperature Hydrogen Sensors on GaN and AlGaN/GaN Heterostructures with Different Catalytic Metals: *Jung-hui Song*¹; Jeffrey S. Flynn²; George R. Brandes²; *Wu Lu*¹; ¹Ohio State University, Dept. of Elect. Engrg., 205 Drees Labs., 2015 Neil Ave., Columbus, OH 43210 USA; ²ATMI, Danbury, CT 06810 USA

Session G: Nanocharacterization I (Advanced Electron Microscopy)

Wednesday AM Room: 129
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Rachel S. Goldman, University of Michigan, Dept. of MSE, Ann Arbor, MI 48109-2136 USA; Julia Hsu, Sandia National Laboratories, Albuquerque, NM 87112-1415 USA

10:00 AM Invited

G1, Nanoscale Control of Epitaxial Quantum Dot Assembly in Ge(Si)/Si Heteroepitaxy: Surajit Atha¹; Jennifer Gray¹; Martin Kammler¹; Alan Kubis¹; Alain Portavoce¹; Tom Vandervelde²; John Bean²; *Robert Hull*¹; Frances Ross³; Jerry Floro⁴; ¹University of Virginia, Matls. Sci., 116 Engineers Way, Charlottesville, VA 22904 USA; ²University of Virginia, Dept. of Elect. & Computer Engrg., Thornton Hall, Charlottesville, VA 22904 USA; ³IBM Yorktown Heights Research Center, Yorktown Heights, NY USA; ⁴Sandia National Laboratories, Albuquerque, NM USA

10:40 AM Invited

G2, Direct Observation of Charge Transfer at a MgO(111) Surface: Arun Subramanian¹; *Laurence Marks*¹; Oliver Warschkow²; Don Ellis²; Peter Blaha³; ¹Northwestern University, Matls. Sci., 2225 N. Campus Dr., Evanston, IL 60201 USA; ²Northwestern University, Dept. of Physics & Astron., Evanston, IL 60201 USA; ³TU Vienna, Inst. f. Matls. Chmst., A-1060 Vienna Austria

11:20 AM Invited

G3, Nanoscale Characterization of Epitaxial Cu₂O Films Made by Electrodeposition: Fumiyasu Oba¹; Run Liu²; Yeonseop Yu¹; Eric Bohannan²; *Frank Ernst*¹; Jay Switzer²; ¹CASE, Matls. Sci. & Engrg., 10900 Euclid Ave., Cleveland, OH 44106-7204 USA; ²University of Missouri, Dept. of Chmst. & Grad. Ctr. for Matls. Rsch., 103 Matls. Rsch. Ctr., Rolla, MO 65409-1170 USA

Session H: High-K Dielectrics and Metal Gates

Wednesday PM Room: 102
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Pat Lenahan, Pennsylvania State University, University Park, PA 16802 USA; Robert Chau, Intel Corporation, Hillsboro, OR 97124 USA

1:30 PM Invited

H1, Dual Metal Gate CMOS Using CVD Metal Gate Electrodes: *Vijay Narayanan*¹; Cyril Cabral¹; Fenton R. McFeely¹; Alessandro C. Callegari¹; Sufi Zafar¹; Paul C. Jamison²; An L. Steegen²; Michael Gribelyuk²; Eduard Cartier¹; Victor Ku²; Phung Nguyen²; Alex Vayshenker²; Ying Li²; Byoung H. Lee²; Supratik Guha¹; Evgeni Gousev¹; Matt Copel¹; Deborah Neumayer¹; Rajarao Jammy¹; Meikei Jeong¹; Wilfried Haensch¹; Ghavam Shahidi¹; ¹IBM, SRDC/Rsch., IBM T. J. Watson Rsch. Ctr., 1101 Kitchawan Rd., Rt. 134, Yorktown Heights, NY 10598 USA; ²IBM, SRDC/Microelect. Div., IBM Microelect., Hopewell Junction, NY 12533 USA

2:10 PM Student

H2, Comparative Study of Trapping Characteristics of HfSiON Dielectric in nMOSFETs with Poly-Si or TiN as Gate Electrode: *D. C. Guo*¹; L. Y. Song¹; X. W. Wang¹; T. P. Ma¹; B. H. Lee²; S. Gopalan²; R. Choi²; ¹Yale University, Dept. of Elect. Engrg., 15 Prospect St., New Haven, CT 06520 USA; ²International Sematech, Austin, TX 78741 USA

2:30 PM Student

H3, Characterization of Ultra-Thin Hf-Based Alternative Dielectric Layers for Si CMOS by Z-Contrast Imaging and Electron Energy-Loss Spectroscopy in STEM: *Melody Pacifico Agustin*¹; Brendan Foran²; Gennadi Bersuker²; Joel Barnett²; Susanne Stemmer¹; ¹University of California, Matls. Dept., Santa Barbara, CA 93106-5050 USA; ²International Sematech, 2706 Montopolis Dr., Austin, TX 78741-6499 USA

2:50 PM Student

H4, Nucleation Density Study of MOCVD Grown Ru and RuO₂ Films for Gate Electrode Applications: *Filippos Papadatos*¹; Steve Consiglio¹; Spyridon Skordas¹; Sebastian Naczas¹; Eric T. Eisenbraun¹; Alain E. Kaloyeros¹; ¹SUNY, Sch. of Nanoscis. & Nanoengr., 251 Fuller Rd., CESTM B110, Albany, NY 12203 USA

3:10 PM Break

3:30 PM

H5, Electrical Characteristics of Single Crystal Silicon and Germanium Layers Grown on (La_xY_{1-x})₂O₃ / Si (111): *E. J. Preisler*¹; N. A. Bojarczuk¹; S. Guha¹; ¹IBM T. J. Watson Research Laboratory, 1101 Kitchawan Rd., Yorktown Hts., NY 10598 USA

3:50 PM Student

H6, Atomic-Scale Structure of Alkaline-Earth Metal on Si(001) Surface Reconstructions: *Duane M. Goodner*¹; David L. Marasco¹; Anthony A. Escudro¹; Michael J. Bedzyk¹; ¹Northwestern University, Matls. Sci. & Engrg., 2220 N. Campus Dr., Evanston, IL 60208 USA

4:10 PM Student

H7, Optical Properties of Prospective High-k Dielectrics: *E. Cicerrella*¹; J. L. Freeouf¹; L. F. Edge²; J. H. Haeni²; D. G. Schlom²; R. Uecker³; P. Reiche³; T. Heeg⁴; J. Schubert⁴; G. Lucovsky⁵; ¹Oregon Health & Sciences University, Dept. of Elect. & Computer Engrg., Beaverton, OR 97006 USA; ²Pennsylvania State University, Dept. of Matls. Sci. & Engrg., Univ. Park, PA 16802-5005 USA; ³Institute of Crystal Growth, Berlin D-12489 Germany; ⁴Institut für Schichten und Grenzflächen, Jülich 52425 Germany; ⁵North Carolina State University, Dept. of Physics, Raleigh, NC USA

4:30 PM

H8, Pr-Silicate Ultrathin Films for High-k Gate Dielectrics Prepared by Metal-Organic Chemical Vapor Deposition: *Yoshihige Tsuchiya*¹; Hirotsugu Fujita²; Hiroshi Mizuta³; Hiroshi Nohira²; Takeo Hattori²; Shunri Oda¹; ¹Tokyo Institute of Technology, Rsch. Ctr. for Quantum Effect Elect., 2-12-1, O-okayama, Meguro-ku, Tokyo 152-8552 Japan; ²Musashi Institute of Technology, Dept. of Elect. & Elect. Engrg., 1-28-1, Tamazutsumi, Setagaya-ku, Tokyo 158-8557 Japan; ³Tokyo Institute of Technology, Dept. of Phys. Elect., 2-12-1, O-okayama, Meguro-ku, Tokyo 152-8552 Japan

Session I: Point Defects, Extended Defects, and Doping in Wide Band Gap Materials

Wednesday PM Room: 141
June 23, 2004 Location: DeBartolo Hall

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

1:30 PM Student

I1, Investigation of Carbon-Related Defect States in MBE-Grown GaN Co-Doped with Carbon and Silicon: *Andrew M. Armstrong*¹; Aaron R. Arehart¹; Daniel S. Green²; Umesh K. Mishra²; James S. Speck²; Steven P. DenBaars²; Steven A. Ringel¹; ¹Ohio State University, Elect. Engrg., 205 Dreese Lab., 2015 Neil Ave., Columbus, OH 43210 USA; ²University of California, Matls. & Elect. & Computer Engrg., Santa Barbara, CA 93016 USA

1:50 PM Student

I2, Beryllium Doped GaN Grown by RF-Plasma Molecular Beam Epitaxy: *Kyoungnae Lee*¹; Brenda VanMil¹; Thomas Myers¹; Lijun Wang¹; Nancy Giles¹; ¹West Virginia University, Physics, PO Box 6315, Morgantown, WV 26506 USA

2:10 PM

I3, Remote Hydrogen Plasma Doping of Single Crystal ZnO:

*Yuri M. Strzhemechny*¹; David C. Look²; Donald C. Reynolds³; Cole W. Litton³; Nelson Y. Garcés⁴; Nancy C. Giles⁴; Larry E. Halliburton⁴; Shigeru Niki⁵; Leonard J. Brillson¹; ¹Ohio State University, Ctr. for Matls. Rsch., 205 Drees Lab., 2015 Neil Ave., Columbus, OH 43210-1272 USA; ²Wright State University, Semiconductor Rsch. Ctr., 3640 Col. Glenn Hwy., Dayton, OH 45435 USA; ³Wright-Patterson AFB, AFRL/MLPS, Bldg. 620, 2241 Avionics Cir., Wright-Patterson AFB, OH 45433 USA; ⁴West Virginia University, Dept. of Physics, PO Box 6315, Morgantown, WV 26506 USA; ⁵National Institute of Advanced Industrial Science and Technology, Thin Film Solar Cells Grp., 1-1-1 Umezono, Tsukuba, Ibaraki 305-8568 Japan

2:30 PM

I4, Microstructure and Nucleation Behavior of Heteroepitaxial GaN Films Grown on Mesa-Patterned 4H-SiC Substrates:

*Nabil D. Bassim*¹; J. A. Powell⁴; Mark E. Twigg¹; Charles R. Eddy¹; Richard L. Henry¹; Ronald T. Holm¹; James C. Culbertson¹; Philip G. Neudeck²; A. J. Trunek³; ¹Naval Research Laboratory, Elect. Sci. & Tech., Code 6812, 4555 Overlook Ave. SW, Washington, DC 20375 USA; ²NASA Glenn Research Center, Cleveland, OH USA; ³OAI, Cleveland, OH USA; ⁴Sest, Inc., Cleveland, OH USA

2:50 PM Student

I5, Drift Dominated AlGaAs Solar Cells for High Temperature

Application: *Yanning Sun*¹; Aristo Yulius¹; Michael P. Young¹; Eric S. Harmon²; Jerry M. Woodall¹; ¹Yale University, Elect. Engrg., PO Box 208284, New Haven, CT 06520 USA; ²LightSpin Technologies, Inc., 314 Main St., Norfolk, MA 02056 USA

Session J:

Si-Based Heterojunctions and Strained Si: Growth, Characterization and Applications

Wednesday PM

Room: 141

June 23, 2004

Location: DeBartolo Hall

Session Chairs: Sarah Olsen, University of Newcastle-upon-Tyne, Newcastle NE1 7RU UK; Doug Webb, ATMI, Meza, AZ 85210 USA

3:30 PM

J1, High Electron Mobility Transistor Structures on Sapphire Substrates Using CMOS Compatible Processing Techniques:

*Carl H. Mueller*¹; Samuel A. Alterovitz²; Edward T. Croke³; George E. Ponchak⁴; ¹Analex Corporation, 21000 Brookpark Rd., MS 7-1, Brookpark, OH 44135 USA; ²NASA Glenn Research Center, 21000 Brookpark Rd., MS 54-5, Cleveland, OH 44135 USA; ³HRL Laboratories, 3011 Malibu Canyon Rd., RL63, Malibu, CA 90265 USA; ⁴NASA Glenn Research Center, 21000 Brookpark Rd., MS 54-5, Cleveland, OH 44135 USA

3:50 PM Student

J2, Temperature Sensitivity of DC Operation of Sub-Micron Strained-Si MOSFETs:

*Valerio Gaspari*¹; *Kristel Fobelets*¹; Sarah H. Olsen²; Jesus Enrique Velazquez-Perez³; Anthony G. O'Neill²; Jing Zhang⁴; ¹Imperial College London, Elect. & Elect. Engrg., MailStop EEE-OSD, Exhibition Rd., London, England SW7 2BT UK; ²University of Newcastle upon Tyne, Elect. Engrg., Newcastle NE1 7RU UK; ³Universidad de Salamanca, Dept. de Física Aplicada, Edificio Trilingue, P.za de la Merced s/n, Salamanca E-37008 Spain; ⁴Imperial College London, Physics, Exhibition Rd., London SW7 2AZ UK

4:10 PM Student

J3, MOS Capacitors on Epitaxial Ge/Si_{1-x}Ge_x with High-k Dielectrics:

*Sachin V. Joshi*¹; Xiao Chen¹; David Q. Kelly¹; Tat Ngai¹; James Chen¹; Sanjay K. Banerjee¹; ¹University of Texas, Microelect. Rsch. Ctr., Bldg. 160, 10100 Burnet Rd., Austin, TX 78758 USA

4:30 PM Student

J4, Uniaxially-Tensile Strained Ultra-Thin Silicon-On-Insulator with Up to 1.0% Strain:

*R. L. Peterson*¹; H. Yin¹; K. D. Hobart²; T. S. Duffy³; J. C. Sturm¹; ¹Princeton University, Dept. of Elect. Engrg., E-Quad, Olden St., Princeton, NJ 08544 USA; ²Naval Research Laboratory, Washington, DC 20375 USA; ³Princeton University, Dept. of Geosci., Guyot Hall, Princeton, NJ 08544 USA

4:50 PM Student

J5, Influence of the Si-Ge Interdiffusion in NiSi_{1-x}Ge_x on Morphological Stability:

*Johan Seger*¹; Tobias Jarmar²; Fredric Ericson²; Ulf Smith²; Shi-Li Zhang¹; ¹KTH, Dept. of Microelect. & Info. Tech., PO Box E229, Kista SE-164 40 Sweden; ²Uppsala University, The Ångström Lab., Matl. Sci., PO Box 534, Uppsala SE-751 21 Sweden

Session K:

Quantum Dots in III-V and Group IV Compounds

Wednesday PM

Room: 136

June 23, 2004

Location: DeBartolo Hall

Session Chair: Ben Shanabrook, Naval Research Laboratories, Nanostructures Section, Washington, DC 20375-5000 USA

1:30 PM

K1, Thermal Processing of InAs and InGaAs Quantum Dots for Device Integration:

*Forrest Kaatz*¹; *Jeff Cederberg*¹; ¹Sandia National Laboratories, PO Box 5800, Albuquerque, NM 87185 USA

1:50 PM

K2, Thermal Effect on the Luminescence Properties of InP Quantum Dots Coupled with an InGaP Quantum Well Through a Thin InAlGaP Barrier:

*X. B. Zhang*¹; J. H. Ryou¹; G. Walter²; N. Holonyak²; R. D. Dupuis¹; ¹Georgia Institute of

Technology, Sch. of Electric & Computer Engrg., Atlanta, GA 30332 USA; ²University of Illinois, Micro & Nanotech. Lab., Urbana, IL 61801 USA

2:10 PM

K3, InAs and InGaAs Quantum Dot Growth by MOCVD: *Theodore Chung*¹; Gabriel Walter²; Nick Holonyak²; Russell D. Dupuis¹; ¹Georgia Institute of Technology, Elect. & Computer Engrg., 777 Atlantic Dr., Atlanta, GA 30332-0250 USA; ²University of Illinois, Micro & Nanotech. Lab., 208 N. Wright St., Urbana, IL 38018 USA

2:30 PM Student

K4, The Effect of Two-Temperature Capping on Germanium/Silicon Quantum Dots and 3D Tomographic Analysis of Superlattices So Composed: *Thomas E. Vandervelde*¹; Alan Kubis²; Kai Sun³; Timothy L. Pernell⁴; James L. Merz³; Robert Hull²; John C. Bean⁴; ¹University of Virginia, Dept. of Physics, Charlottesville, VA 22904 USA; ²University of Virginia, Dept. of Matls. Sci. & Engrg., Charlottesville, VA 22904 USA; ³University of Notre Dame, Dept. of Physics, Notre Dame, IN 46556 USA; ⁴University of Virginia, Dept. of Elect. & Computer Engrg., Charlottesville, VA 22904 USA

2:50 PM Student

K5, Photoluminescence Study of Ge/Si Quantum Dots Grown with Single and Double Si Caps: *Kai Sun*¹; Thomas E. Vandervelde²; Alan Kubis³; Timothy L. Pernell⁴; Robert Hull³; John C. Bean⁴; James L. Merz¹; ¹University of Notre Dame, Dept. of Elect. Engrg., 275 Fitzpatrick Hall, Notre Dame, IN 46556 USA; ²University of Virginia, Dept. of Physics, Charlottesville, VA 22904 USA; ³University of Virginia, Dept. of Matls. Sci. & Engrg., Charlottesville, VA 22904 USA; ⁴University of Virginia, Dept. of Elect. & Computer Engrg., Charlottesville, VA 22904 USA

Session L: Contacts to Silicon Carbide

Wednesday PM Room: 138
June 23, 2004 Location: DeBartolo Hall

Session Chair: Lisa Porter, Carnegie Mellon University, Dept. of MSE, Pittsburgh, PA 15213-3890 USA

1:30 PM Student

L1, Electronic Defect States at Annealed Metal/4H-SiC Interfaces: *Sergey Tumakha*¹; Leonard J. Brillson¹; Robert S. Okojie¹; ¹Ohio State University, Elect. Engrg., 2015 Neil Ave., 205 Drees Lab., Columbus, OH 43210 USA; NASA-Glenn Research Center, 21000 Brookpark Rd., M/S 77-1, Cleveland, OH 44135 USA

1:50 PM Student

L2, Schottky Diodes on n-Type 4H-SiC Grown by Sublimation Epitaxy and Chemical Vapor Deposition: The Effect of Deep Level Defects: *Daniel J. Ewing*¹; Rafal R. Ciechonski²; Mikael

Syvajarvi²; Rositza Yakimova²; Lisa M. Porter¹; ¹Carnegie Mellon University, Matls. Sci. & Engrg., 5000 Forbes Ave., Pittsburgh, PA 15213 USA; ²Linköping University, Dept. of Physics & Measurement Tech., SE-581 83, Linköping Sweden

2:10 PM Student

L3, Mechanism of Ohmic Behavior of Al/Ti Contacts to P-Type 4H-SiC After Annealing: *Brian J. Johnson*¹; Michael A. Capano¹; ¹Purdue University, Elect. & Computer Engrg., 465 Northwestern Ave., W. Lafayette, IN 47907 USA

2:30 PM Student

L4, In-Situ Characterization of Ohmic Contacts to N-Type SiC Under High Temperature and Current: *David DeAngelis*¹; Robert S. Okojie²; ¹Carnegie Mellon University, Elect. & Computer Engrg., 5000 Forbes Ave., Pittsburgh, PA 15213 USA; ²NASA Glenn Research Center, Sensors & Elect. Tech. Branch, 21000 Brookpark Rd., MS 77-1, Cleveland, OH USA

2:50 PM Student

L5, Ta-Ru-N Diffusion Barriers for High-Temperature Metalizations to SiC: *C. M. Eichfeld*¹; M. A. Horsey¹; S. E. Mohney¹; A. V. Adedeji²; J. R. Williams²; ¹Pennsylvania State University, Matls. Sci. & Engrg., Univ. Park, PA 16802 USA; ²Auburn University, Physics Dept., AL 36849 USA

Session M: Non-Destructive Testing and In-Situ Monitoring-Control

Wednesday PM Room: 138
June 23, 2004 Location: DeBartolo Hall

Session Chairs: Kurt Eyink, Air Force Research Laboratory, Wright Patterson AFB, OH 45433-7707 USA; Mark Goorsky, University of California, Dept. of MSE, Los Angeles, CA 90095-1595 USA

3:30 PM Student

M1, Interpretation of Prism-Coupled Optical Reflectivity Measurements from He-Implanted Single Crystal PZN-PT Waveguides: *Aijie Chen*¹; M. Levy¹; P. D. Moran¹; ¹Michigan Technological University, Matls. Sci. & Engrg., 1400 Townsend Dr., Houghton, MI 49931 USA

3:50 PM Student

M2, Investigation of Longitudinal Optical Phonon Plasmon Coupled Modes in SiC Epitaxial Film Using FTIR: *Swapna Geetha Sunkari*¹; Michael S. Mazzola¹; Janice P. Mazzola²; Jeffery L. Wyatt¹; ¹Mississippi State University, Elect. Computer Engrg., 216 Simrall Engrg. Bldg., Hardy Rd., Starkville, MS 39759 USA; ²SemiSouth Laboratories Inc., One Rsch. Blvd., Ste.201B, Starkville, MS 39759 USA

4:10 PM

M3, Spectroscopic Ellipsometry Analysis of the Critical Point Structure of InAs/GaSb Strain-Layer Superlattices: *K. G. Eyink¹; H. J. Haugan¹; G. J. Brown¹; D. H. Tomich¹; L. Grazulis¹; F. Szmulowicz¹;* ¹Air Force Research Laboratory, AFRL/MLPS, 3005 Hobson Way, Wright-Patterson AFB, OH 45433 USA

4:30 PM

M4, A Fast, Direct and Fully Automated Measurement of Layer Relaxation Using X-Ray Diffraction: *Paul Anthony Ryan¹; Kevin M. Matney²; Petra Feichtinger²;* ¹Bede Scientific Instruments Ltd., Belmont Business Park, Belmont, Durham, Co Durham DH1 1TW UK; ²Bede Inc., 14 Inverness Dr. E., Ste. H-100, Englewood, CO 80112 USA

Session N:

Nitride HEMTs: RF Dispersion and Passivation

Wednesday PM
June 23, 2004

Room: 155
Location: DeBartolo Hall

Session Chairs: Mike Manfra, Lucent Technologies, Bell Labs., Murray Hill, NJ 07974 USA; Christian Wetzel, Uniroyal Optoelectronics, Tampa, FL 33619 USA

1:30 PM

N1, Characterization of Trapping Centers in the Structure of AlGaIn/GaN HEMTs: *Oleg Mitrofanov¹; Michael Manfra¹;* ¹Lucent Technologies, Bell Labs., 600 Mountain Ave., Murray Hill, NJ 07974 USA

1:50 PM Student

N2, Reduction of Current Collapse in an Un-Passivated AlGaIn-GaN Double-Channel HEMT: *Rongming Chu¹; Yugang Zhou¹; Jie Liu¹; Kevin J. Chen¹; Kei May Lau¹;* ¹Hong Kong University of Science & Technology, Dept. of Elect. & Elect. Engrg., Clear Water Bay, Kowloon, Hong Kong

2:10 PM Student

N3, Effect of Different SiN_x Passivation and Their Strain on the Reliability of GaN-Based HEMT Structures: *Zhihong Feng¹; Yugang Zhou¹; Shujun Cai¹; Kei May Lau¹;* ¹Hong Kong University of Science and Technology, Dept. of Elect. & Elect. Engrg., Clear Water Bay, Kowloon, Hong Kong

2:30 PM

N4, Passivation of GaN and AlGaIn Using Ex-Situ UV-Ozone and MBE Grown Oxides: *Brent P. Gila¹; A. H. Onstine¹; M. Hlad¹; R. Frazier¹; G. T. Thaler¹; A. Herrero¹; R. Mehandru²; J. LaRoche²; S. Kim²; E. Lambers²; C. R. Abernathy¹; F. Ren²; S. J. Pearton¹; N. Moser³; R. Fitch³;* ¹University of Florida, Matls. Sci. & Engrg., PO Box 116400, Gainesville, FL 32611-6400 USA; ²University of Florida, Chem. Engrg., PO Box 116005, Gainesville, FL 32611-6005 USA; ³Air Force Research Laboratory, Electron Devices Branch, Wright-Patterson AFB, OH 45433 USA

2:50 PM Student

N5, Successful Passivation of GaN/AlGaIn HFET by Use of Spin-Deposited Polyimide: *Mark D. Hampson¹; Uttiya Chowdhury²; Michael M. Wong³; Dongwon Yoo²; Xuebing Zhang²; Milton Feng¹; Russell D. Dupuis²;* ¹University of Illinois, Micro & Nanotech. Lab., 208 N. Wright, Urbana, IL 61801 USA; ²Georgia Institute of Technology, Sch. of Elect. & Computer Engrg., 778 Atlantic Dr., Atlanta, GA 30332-0250 USA; ³University of Texas, Microelect. Rsch Ctr., 10100 Burnet Rd., Austin, TX 78758 USA

Session O:

Wide Bandgap Light Emitting Diodes

Wednesday PM
June 23, 2004

Room: 155
Location: DeBartolo Hall

Session Chairs: Russell Dupuis, Georgia Institute of Technology, Sch. of Elect. & Computer Engrg., Atlanta, GA 30332-0250 USA; Andrew Allerman, Sandia National Laboratories, Albuquerque, NM 87185 USA

3:30 PM Student

O1, Enhancement of Blue-Light Extraction Efficiency by Surface Texturing: *Shao-Hua Huang¹; Dong-Sing Wu¹; Ray-Hua Horng²; Tsung-Yu Chen²;* ¹National Chung-Hsing University, Dept. of Matls. Engrg., 250, Kuo Kuang Rd., Taichung 402 Taiwan; ²National Chung-Hsing University, Inst. of Precision Engrg., 250, Kuo Kuang Rd., Taichung 402 Taiwan; ³Advanced Epitaxy Technology Inc., R&D, 119, Kuangfu N. Rd, Hsinchu Industrial Park, Hsinchu 303 Taiwan

3:50 PM

O2, Improving the Wavelength-Power Performance in Green GaInN/GaN Light Emitting Diodes: *Christian Wetzel¹;* Theeradetch Detchprohm¹; Peng Li¹; Jeffrey S. Nelson¹; ¹Uniroyal Optoelectronics, 3401 Cragmont Dr., Tampa, FL 33619 USA

4:10 PM

O3, Electrical and Optical Properties of AlGaInN Based Deep Ultraviolet Light Emitting Diodes Grown on (0001) Sapphire: *Boris A. Borisov¹; Vladimir V. Kuryatkov¹; Jayant Saxena¹; Gela Kipshidze¹; K. A. Bulashevich²; I. A. Zhmakin²; Sergey Yu. Karpov²; Yuri N. Makarov²; Mark Holtz³; Yuriy Kudryavtsev⁴; Rene Asomoza⁴; Sergey A. Nikishin¹; Henryk Temkin¹;* ¹Texas Tech University, Nano Tech Ctr./Elect. & Computer Engrg., Box 43102, MS-3102, Lubbock, TX 79409 USA; ²STR Inc., PO Box 70604, Richmond, VA 23255-0604 USA; ³Texas Tech University, Nano Tech Ctr./Physics, Lubbock, TX 79409 USA; ⁴CINVESTAV, SIMS Lab. of SEES/ Elect. Engrg., Mexico D.F. 07300 Mexico

4:30 PM

O4, High Performance AllnGaN Ultraviolet Light-Emitting Diode at 340 nm: *S.-R. Jeon*¹; M. Gherasimova¹; Z. Ren¹; J. Su¹; G. Cui¹; J. Han¹; H. Peng²; E. Makarona²; Y. He²; Y.-K. Song²; A. V. Nurmikko²; L. Zhou³; W. Goetz³; M. Krames³; ¹Yale University, Dept. of Elect. Engrg., New Haven, CT 06520 USA, ²Brown University, Div. of Engrg., Providence, RI 02912 USA; ³Lumileds Lighting, LLC, San Jose, CA 95131 USA

4:50 PM

O5, Late News

Session P: Nanocharacterization II (Including Spintronic Materials)

Wednesday PM
June 23, 2004

Room: 129
Location: DeBartolo Hall

Session Chairs: Julia Hsu, Sandia National Laboratories, Albuquerque, NM 87112-1415 USA; Jacek Furdyna, University of Notre Dame, Notre Dame, IN 46556 USA

1:30 PM Student

P1, Spatially Resolved Electroluminescence from Operating Organic Light-Emitting Diodes Using Conductive Atomic Force Microscopy: *Liam S.C. Pingree*¹; Mathew M. Kern²; Brian J. Scott²; Tobin J. Marks²; Mark C. Hersam¹; ¹Northwestern University, Matl. Sci. & Engrg., 2220 Campus Dr., Evanston, IL 60208 USA; ²Northwestern University, Chmst. & Matls. Rsch. Ctr., Evanston, IL 60208 USA

1:50 PM Student

P2, Experimental Study of Masking Scheme Effects on the Nanoscale Sidewall Roughness of Deep Etched InP/InGaAsP Heterostructures for Optical Waveguides: *Weifeng Zhao*¹; Jeong-Oun Bae¹; Jae-Hyung Jang¹; Ilesanmi Adesida¹; M. Kwakernaak²; A. Lepore²; J. H. Abeles²; ¹University of Illinois, Micro & Nanotech. Lab. & Dept. of Elect. & Computer Engrg., Urbana, IL 61801 USA; ²Sarnoff Corporation, Princeton, NJ 08543 USA

2:10 PM Student

P3, Multi-Step Feedback Controlled Lithography: A Processing Technique for Fabricating Atomically Registered Organosilicon Heterostructures Using Room Temperature Ultra-High Vacuum Scanning Tunneling Microscopy: *Rajiv Basu*¹; Nathan P. Guisinger¹; Mark E. Greene¹; Mark C. Hersam¹; ¹Northwestern University, Matls. Sci. & Engrg., Cook Hall - Rm. #2036, 2220 Campus Dr., Evanston, IL 60208 USA

2:30 PM

P4, Correlating Atomic-Scale Materials Morphology with Optical Properties of Mid-IR W-Laser Structures: *Georo I. Boishin*¹; Chadwick L. Canedy¹; Chul Soo Kim¹; Igor Vurgaftman¹; William W. Bewley¹; Jerry R. Meyer¹; Lloyd J. Whitman¹; ¹Naval Research Laboratory, 4555 Overlook Ave. SW, Washington, DC 20375 USA

2:50 PM

P5, Late News

3:10 PM Break

3:30 PM Student

P6, Characterization and Spintronic Applications of ErAs Interlayers in Ferromagnetic Metal/GaAs Heterostructures: *B. D. Schultz*¹; J. L. Hilton¹; J. Strand²; C. Adelman¹; P. A. Crowell²; C. J. Palmström¹; ¹University of Minnesota, Dept. of Chem. Engrg. & Matls. Sci., Minneapolis, MN 55455 USA; ²University of Minnesota, Sch. of Physics & Astron., Minneapolis, MN 55455 USA

3:50 PM

P7, Advanced Microstructure Characterization of Epitaxial Semimetallic ErAs Particles in an In_{0.53}Ga_{0.47}As Matrix: *Dmitri O. Klenov*¹; Daniel C. Driscoll¹; Arthur C. Gossard¹; Susanne Stemmer¹; ¹University of California, Matls. Dept., Santa Barbara, CA 93106-5050 USA

4:10 PM Student

P8, Reaction Kinetics, Thermodynamics, and Growth Characteristics of Ultra-Thin Mn Films on GaAs(001): *J. L. Hilton*¹; B. D. Schultz¹; C. J. Palmström¹; ¹University of Minnesota, Dept. of Chem. Engrg. & Matls. Sci., Minneapolis, MN 55455 USA

4:30 PM Student

P9, Nanometer-Scale Studies of Point Defect Distributions in GaMnAs Films: *J. N. Gleason*¹; M. E. Hjelmstad¹; V. D. Dasika²; R. S. Goldman¹; S. Fathpour²; S. Chakrabarti²; P. K. Bhattacharya²; ¹University of Michigan, Dept. of Matls. Sci. & Engrg., Ann Arbor, MI 48109 USA; ²University of Michigan, Elect. Engrg. & Computer Sci., Ann Arbor, MI 48109 USA

4:50 PM Student

P10, Mn-Doped InAs Self-Organized Quantum Dots with Curie Temperatures Above 300 K: *M. Holubi*¹; S. Chakrabarti¹; S. Fathpour¹; P. Bhattacharya¹; Y. Lei²; T. D. Mishima³; M. B. Santos³; M. B. Johnson³; D. A. Blom⁴; ¹University of Michigan, Dept. of Elect. Engrg. & Computer Sci., Solid State Elect. Lab., Ann Arbor, MI 48109-2122 USA; ²Argonne National Laboratory, Matl. Sci. Div., Electron Microscopy Ctr., Argonne, IL 60439 USA; ³University of Oklahoma, Dept. of Physics & Astron., Ctr. for Semiconductor Physics in Nanostruct., Norman, OK 73019 USA; ⁴Oak Ridge National Laboratory, Metals & Ceram. Div., Oak Ridge, TN 37831 USA

Session Q: High-K Oxides

Thursday AM Room: 102
June 24, 2004 Location: DeBartolo Hall

Session Chairs: Evgeni Gusev, IBM Corporation, T. J. Watson Rsch. Ctr. USA; T. P. Ma, Yale University, Dept. of Elect. Engrg., New Haven, CT 06520-8284 USA

8:20 AM Student

Q1, Novel Ultra-Thin TiAlO_x Alloy Oxide for New Generation of Gate Dielectric: *Wei Fan*¹; Bernd C. Kabius¹; Sanjib Saha¹; John A. Carlisle¹; Orlando Auciello¹; R. P.H. Chang²; Ciro Lopez³; Eugen Irene³; ¹Argonne National Laboratory, Matls. Sci. Div., Argonne, IL 60439 USA; ²Northwestern University, Dept. of Matls. Sci. & Engrg., Evanston, IL 60208 USA; ³University of North Carolina, Chmst. Dept., Chapel Hill, NC 27599 USA

8:40 AM Student

Q2, Room Temperature Fabrication of Al₂O₃/TiO₂/Al₂O₃ Nanolaminates for High-k Gate Dielectrics Structure: *Wei Fan*¹; Sanjib Saha¹; Bernd C. Kabius¹; John A. Carlisle¹; Orlando Auciello¹; R. P.H. Chang²; ¹Argonne National Laboratory, Matls. Sci. Div., Argonne, IL 60439 USA; ²Northwestern University, Dept. of Matls. Sci. & Engrg., Evanston, IL 60208 USA

9:00 AM

Q3, Relative Stability and Electronic Properties of Zirconium and Hafnium Nitrides and Oxynitrides. First Principles DFT Study: *Anatoli Korkin*¹; Dmitry Bazhanov²; Andrey Knizhnik²; Andrey Safonov²; Matt Stoker³; Alexander Bagaturyants²; ¹Nano & Giga Solutions, 1683 E. Spur St., Gilbert, AZ 85296 USA; ²Kintech, Moscow Russia; ³Motorola, Tempe, AZ USA

9:20 AM Student

Q4, High Deposition Rate Atomic Layer Deposition Process: *Gi Kim*¹; Anu Srivinandava¹; Ana Londergan¹; Sasangan Ramanaathan¹; Tom Seidel¹; ¹Genus Inc., Sunnyvale, CA 94087 USA

9:40 AM

Q5, Late News

10:00 AM Break

10:20 AM

Q6, Characteristics of WN_x and ZrN_x as Gate Electrodes: The Effect of Nitrogen Concentration: *Pei-Chuen Jiang*¹; S. H. Wang¹; Yi-Sheng Lai¹; J. S. Chen¹; ¹National Cheng Kung University, Dept. of Matls. Sci. & Engrg., No.1, Ta-Hsueh Rd., Tainan 701 Taiwan

10:40 AM Student

Q7, The Study of Electrical Characteristics of Different HfO₂-Al₂O₃ Stack Layer Grown by Atomic Layer Deposition: Yong-Seok Kim¹; Dongwon Lee¹; Dongchan Suh¹; Dae-Hong Ko¹; Ja-Hum Ku²; ¹Yonsei University, Dept. of Ceram. Engrg., 134, Shinchon-Dong, Seodaemun-Gu, Seoul, 120-749 Korea; ²Sam-

sung Electronics Company, Ltd., R&D, San #24, Nongseo-Ri, Kiheung-Eup, Yongin, Kyungki-Do 449-900 Korea

11:00 AM

Q8, Nanoscale Characterizations of Ferroelectric BT-Based Films for High-Density FeRAMs: M. J. Jin¹; W. I. Kweon¹; N. J. Park¹; S. J. Kim¹; *B. L. Yang*¹; S. K. Hong²; S. S. Lee²; Y. J. Park²; ¹Kumoh National Institute of Technology, Dept. of Matls. Sci. & Engrg., 188 Shinpyung-Dong, Gumi-si, Gyeongbuk 730-701 Korea; ²Hynix Semiconductor Inc., Memory R&D Div., New Device Team, Icheon-si, Kyoungki-Do 467-701 Korea

11:20 AM Student

Q9, Characterization of Cerium Oxide (CeO₂) and Hafnium Oxide (HfO₂) Thin Films on Si (100) as Alternative High-k Gate Oxide Deposited by Pulsed Laser Ablation: *K. Karakaya*¹; J. H.M. Snijders²; P. Graat²; T. Dao²; A. J.H. M. Rijnders¹; Z. M. Rittersma³; D. H.A. Blank¹; ¹University of Twente, Faculty of Sci. & Tech., PO Box 217, Enschede 7500AE The Netherlands; ²Philips, Ctr. for Indust. Tech., Prof. Holstlaan 4, Eindhoven 5656AA The Netherlands; ³Philips Research Leuven, Kapeldreef 75, Leuven 3001 Belgium

Session R: Nanotubes and Nanowires I

Thursday AM Room: 141
June 24, 2004 Location: DeBartolo Hall

Session Chairs: Hou T. Ng, NASA Ames Research Center, Moffett Field, CA 94043 USA; Ray Tsui, Motorola Laboratories, Phys. Scis. Rsch. Labs., Tempe, AZ 85284 USA

8:20 AM

R1, Growth of InMnAs Nanowires for Low-Dimensional Spintronic Applications: Steven J. May¹; Jian-Guo Zheng¹; Bruce W. Wessels¹; *Lincoln J. Lauhon*¹; ¹Northwestern University, Matls. Sci. & Engrg. & Matls. Rsch. Ctr., 2220 Campus Dr., Evanston, IL 60208 USA

8:40 AM

R2, Effects of Surface Oxide Properties on the Electrical Characteristics of Ge Nanowires: Dunwei Wang¹; *Ying-Lan Chang*²; Hongjie Dai¹; ¹Stanford University, Dept. of Chmst., Stanford, CA 94305 USA; ²Agilent Technologies Inc., Agilent Labs., 3500 Deer Creek Rd., Palo Alto, CA 94304 USA

9:00 AM Student

R3, MOCVD Growth and Characterization of GaN Nanowires: *Jie Su*¹; George Cui¹; Maria Gherasimova¹; Seong-Ran Jeon¹; Jung Han¹; Dragos Ciuparu²; Lisa Pfefferle²; Yiping He³; Arto V. Nurmikko³; ¹Yale University, Elect. Engrg., New Haven, CT 06520 USA; ²Yale University, Chem. Engrg., New Haven, CT 06520 USA; ³Brown University, Engrg., Providence, RI 02912 USA

9:20 AM Student

R4, Effect of Growth Conditions on the Composition and Structure of SiGe Alloy and SiGe/Si Heterostructure Nanowires: *Kok-Keong Lew*¹; Ling Pan²; Timothy E. Bogart¹; Elizabeth C. Dickey²; Joan M. Redwing¹; ¹Pennsylvania State University, Dept. of Matls. Sci. & Engrg., Univ. Park, PA 16802 USA; ²Pennsylvania State University, Matls. Rsch. Inst., Univ. Park, PA 16802 USA

9:40 AM Student

R5, Four-Point Resistivity and Gate-Dependent Conductance of p- and n-Type Silicon Nanowires: *Yanfeng Wang*¹; Kok-Keong Lew²; Marco Cabassi¹; Tsung-Ta Ho¹; Joan M. Redwing²; Theresa S. Mayer¹; ¹Pennsylvania State University, Dept. of Elect. Engrg., Univ. Park, PA 16802 USA; ²Pennsylvania State University, Dept. of Matls. Sci. & Engrg., Univ. Park, PA 16802 USA

10:00 AM Break

10:20 AM

R6, Properties of Gallium Nitride Particles Prepared by Ammonolysis from Different Starting Materials: *Birgit Schwenzler*¹; Jerry Hu²; Stacia Keller¹; Frederick F. Lange²; Steven P. DenBaars²; Umesh K. Mishra¹; ¹University of California, ECE Dept., Santa Barbara, CA 93106-9560 USA; ²University of California, Matls. Dept., Santa Barbara, CA 93106 USA

10:40 AM Student

R7, Growth Control of Carbon Nanotube by Applied Electric Field: *Masatoshi Maeda*¹; Takafumi Kamimura²; Chan-Kyeong Hyon³; Atsuhiko Kojima³; Kousuke Kurachi⁴; Takushi Kawai⁴; Masashi Torigoe⁴; Kazuhiko Matsumoto²; ¹University of Tsukuba, Pure & Applied Scis., 1-1-1, Tennoudai, Tsukuba, Ibaraki 305-8577 Japan; ²Osaka University, Grad. Sch. of Engrg. Sci., 8-1, Mihogaoka, Ibaraki, Osaka 565-0871 Japan; ³CREST/JST, 4-1-8, Motomachi, Kawaguchi, Saitama 332-0012 Japan; ⁴Meiji University, Dept. of Elect. & Communications, 1-1-1, Higasimita, Tama, Kawasaki 214-8571 Japan

11:00 AM Student

R8, Growth of Arrays of mm Long, Straight Single-Walled Carbon Nanotubes: *Zhen Yu*¹; Shengdong Li¹; Lifeng Zheng¹; Peter Burke¹; ¹University of California, EECS MS 2625, Irvine, CA USA

11:20 AM

R9, Growth and Characterization of Single-Walled Carbon Nanotubes by Microwave Plasma-Enhanced Chemical Vapor Deposition: *Matthew Maschmann*¹; A. Goyal²; Zafar Iqbal²; Timothy S. Fisher¹; Roy Gat³; ¹Purdue University, Mech. Engrg., 585 Purdue Mall, W. Lafayette, IN 47907-2088 USA; ²New Jersey Institute of Technology, Dept. of Chmst., NJ USA; ³Seocal, Inc.

11:40 AM

R10, Synthesis, Electron Microscopy and Applications of Inorganic Nanotubes: *Maja Remskar*¹; Ales Mrzel¹; Janez Kovac¹; Rosendo Sanjines²; ¹Jozef Stefan Institute, Jamova 39, Ljubljana SI-1000 Slovenia; ²Ecole Polytechnique Federale de Lausanne, Inst. de Physique de la Matiere Complexe, EPFL-Ecublens, Lausanne 1015 Switzerland

Session S: Physics and Devices in Low Dimensional Structures

Thursday AM
June 24, 2004

Room: 136
Location: DeBartolo Hall

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

8:20 AM Invited

S1, Polarization Measurements of a Single Charge-Tunable Quantum Dot: *Eric Stinaff*¹; Allan Bracker¹; Daniel Gammon¹; Morgan Ware¹; Andrew Shabaev¹; Alexander Efros¹; Vladimir Korenev²; ¹Naval Research Laboratory, Washington, DC USA; ²A. F. Ioffe Institute, St. Petersburg Russia

9:00 AM Student

S2, Spatial Ordering of InAs Quantum Dots in a Microdisk Cavity to Achieve Large Spontaneous Emission Enhancement: *Zhigang Xie*¹; Glenn Solomon¹; ¹Stanford University, Solid State Photonics Lab., CISX B113, Stanford, CA 94305 USA

9:20 AM

S3, Multicolor Quantum Dot Infrared Photodetectors (QDIPs): *Seongsin M. Kim*¹; ¹Stanford University, Elect. Engrg. Dept., Stanford, CA USA

9:40 AM

S4, Characteristics of Low Threshold Quantum Dot Lasers Operating at 1.31 μm and a Study of Their Carrier Recombination Processes: *Kristian Michael Groom*¹; Hui-Yun Liu¹; Ian R. Sellers²; Tom Badcock³; Marina Gutiérrez¹; Sumon K. Ray¹; Jo Shien Ng¹; Mark Hopkinson¹; Richard A. Hogg¹; John P.R. David¹; David J. Mowbray³; Maurice S. Skolnick³; ¹University of Sheffield, Elect. & Elect. Engrg., Sir Frederick Mappin Bldg., Mappin St., Sheffield, S. Yorkshire S1 3JD UK; ²University of Sheffield, Physics & Astron., Hicks Bldg., Hounsfield Rd., Sheffield, S. Yorkshire S3 7RH UK

10:00 AM Break

10:20 AM

S5, Carrier Recombination Lifetime in Compressively Strained InGaAs Quantum Well Lasers Grown on GaAs Substrates: *Wataru Susaki*¹; Tomoyoshi Ohhashi¹; ¹Osaka Electro-Communication University, 18-8 Hatsu-Cho, Neyagawa 572-8530 Japan

10:40 AM

S6, Optimizing the Growth of 1300 nm InAs/GaAs Quantum Dots with InGaAs and InAlAs Layers: Achievement of High-Performance Lasers: *H. Y. Liu*¹; I. R. Sellers²; K. M. Groom¹; M. Hopkinson¹; T. J. Badcock²; D. J. Mowbray²; M. S. Skolnick²; ¹University of Sheffield, EPSRC Natl. Ctr. for III-V Tech., Dept. of Elect. & Elect. Engrg., Sheffield S1 3JD UK; ²University of Sheffield, Dept. of Physics & Astron., Sheffield S3 7RH UK

11:00 AM Student

S7, Sub-Picosecond Photocarrier-Lifetimes at 1.55 μm in GaSb/ErSb Nano-Particle Superlattices: *Micah Paul Hanson*¹; Daniel C. Driscoll¹; Jeremy Zimmerman¹; Elliott R. Brown²; Arthur C. Gossard¹; ¹University of California, Mats. Dept., Santa Barbara, CA 93106-5050 USA; ²University of California, ECE Dept., Santa Barbara, CA 93106 USA

11:20 AM Student

S8, GaAs BDD Quantum Node Switches Fabricated on Selectively MBE Grown Quantum Wire Networks: *Takahiro Tamura*¹; Miki Yumoto¹; Taketomo Sato¹; Hideki Hasegawa¹; ¹Hokkaido University, Rsch. Ctr. for Integrated Quantum Elect. & Grad. Sch. of Elect. & Info. Engrg., North 13, West 8, Kita-ku, Sapporo, Hokkaido 0608628 Japan

11:40 AM

S9, Growth of PbTe-Based Superlattice Structures for High-Temperature Thermoelectric Applications: *Chris Caylor*¹; Paul Crocco¹; Tom Colpitts¹; John Posthill¹; Rama Venkatasubramanian¹; ¹Research Triangle Institute, International, Ctr. for Thermoelect. Rsch., 3040 Cornwallis Rd., PO Box 12194, Research Triangle Park, NC 27709-2194 USA

Session T: Molecular Electronics I

Thursday AM
June 24, 2004

Room: 138
Location: DeBartolo Hall

Session Chairs: Avik Ghosh, Purdue University, W. Lafayette, IN 47907 USA; Theresa Mayer, Pennsylvania State University, University Park, PA 16802-2705 USA

8:20 AM

T1, Abstract not available

9:00 AM Student

T2, Metal-Molecule-Semiconductor Heterostructure Devices on GaAs and Si: *Saurabh Lodha*¹; Adina Scott¹; David B. Janes¹; ¹Purdue University, Elect. & Computer Engrg., 465 Northwestern Ave., W. Lafayette, IN 47907 USA

9:20 AM Student

T3, Hybrid-Basis Modeling of Transport Through Silicon-Based Molecular Devices: *Gengchiao Liang*¹; Avik W. Ghosh¹; Titash Rakshit¹; Supriyo Datta¹; ¹Purdue University, Sch. of Elect. & Computer Engrg., W. Lafayette, IN 47906 USA

9:40 AM

T4, Electrical Properties of Organic/Silicon Junctions: *Gregory P. Lopinski*¹; Thomas J. Hammond¹; Bruno Fabre¹; Danial D.M. Wayner¹; ¹National Research Council, Steacie Inst. for Molecular Scis., 100 Sussex Dr., Ottawa, Ontario K1A 0R6 Canada

10:00 AM Break

10:20 AM Student

T5, A Self-Consistent Transport Model for Molecular Conductors with Few Applications to Real Systems: *Ferdows Zahid*¹; Magnus Paulsson²; Eric Polizzi¹; Avik W. Ghosh¹; Supriyo Datta¹; ¹Purdue University, Elect. & Computer Engrg., EE Bldg., 465 Northwestern Ave., W. Lafayette, IN 47907-2035 USA; ²Danish Technical University, Physics, Sorgenfrivej 3, Lyngby 2800 Denmark

10:40 AM Student

T6, Inelastic Electron Tunneling Spectroscopy of Self-Assembled Alkanedithiol Monolayers: *Wenyong Wang*¹; Takhee Lee¹; Ilona Kretzschmar¹; Mark A. Reed¹; ¹Yale University, Elect. Engrg., Applied Physics, & Physics, PO Box 208284, New Haven, CT 06520 USA

11:00 AM Student

T7, In-Situ Analysis of In-Wire Molecular Junctions Using Inelastic Tunneling Spectroscopy: *Marco A. Cabassi*¹; Lintao Cai¹; Yoram Selzer²; David L. Allara²; Thomas E. Mallouk²; Theresa S. Mayer¹; ¹Pennsylvania State University, Elect. Engrg., 121 Elect. Engrg. E., Univ. Park, PA 16802 USA; ²Pennsylvania State University, Chmst., 152 Davey, Univ. Park, PA 16802 USA

11:20 AM

T8, Charge Transport and Scaling in Molecular Wires: *Amy Szuchmacher Blum*¹; James G. Kushmerick¹; Steven K. Pollack¹; Martin H. Moore¹; Jawad Naciri¹; Raganathan Shashidhar²; B. R. Ratna¹; ¹Naval Research Laboratory, Ctr. for Bio/Molecular Engrg., Code 6930, 4555 Overlook Ave. SW, Washington, DC 20375 USA; ²Geo-Centers, Inc., Maritime Plaza One, Ste. 050, 1201 M St. SE, Washington, DC 20003 USA

Session U: III-Nitride Growth

Thursday AM
June 24, 2004

Room: 155
Location: DeBartolo Hall

Session Chairs: Russell Dupuis, Georgia Institute of Technology, Atlanta, GA 30332-0250 USA; Andrew Allerman, Sandia National Laboratories, Albuquerque, NM 87185 USA

8:20 AM Student

U1, The Compositional Dependence of Phase Separation in InGaN Alloys: *Manu Rao*¹; Subhash Mahajan¹; ¹Arizona State University, Chem. & Mats. Engrg., PO Box 876006, Tempe, AZ 85287-6006 USA

8:40 AM

U2, Crystal Quality of InN Thin Films Grown on ZnO Substrate by RF-MBE: *Satoru Ohuchi*¹; Toshiyuki Takizawa¹; ¹Matsushita Electric Industrial, Semiconductor Device Rsch. Ctr., 1-1, Saiwai-chou, Takatsuki, Osaka 569-1193 Japan

9:00 AM Student

U3, Microstructure and Enhanced Morphology of Planar Nonpolar m-Plane GaN Grown by Hydride Vapor Phase Epitaxy: *Benjamin Allen Haskell*¹; Feng Wu¹; Hideo Sasano¹; Paul T. Fini¹; Steven P. DenBaars¹; James S. Speck¹; Shuji Nakamura¹; ¹University of California, Engr. Matls. Dept., Santa Barbara, CA 93106-5050 USA

9:20 AM

U4, Fabrication of GaN Quantum Dots on AlGaIn Template by Liquid Droplet Epitaxy: *Maria Gherasimova*¹; S.-R. Jeon¹; G. Cui¹; J. Su¹; Z. Ren¹; J. Han¹; Y. He²; Y.-K. Song²; A. V. Nurmikko²; ¹Yale University, Dept. of Elect. Engrg., PO Box 208284, New Haven, CT 06520 USA; ²Brown University, Div. of Engrg., 182 Hope St., Providence, RI 02912 USA

9:40 AM Student

U5, Analysis of GaN on Highly-Compliant Nanoscale Silicon Pillar Arrays: *Xinyu Sun*¹; Jianyu Liang²; Jimmy Xu²; Steve Hersee¹; ¹University of New Mexico, Ctr. for High Tech. Matls., 1313 Goddard SE, Albuquerque, NM 87106 USA; ²Brown University, Div. of Engrg., Box D, Providence, RI 02912 USA

10:00 AM Break**10:20 AM**

U6, Growth and Characterization of Single Crystal GaN by the Ammonothermal Method: *Michael J. Callahan*¹; Kelly Rakes¹; David F. Bliss¹; Lionel O. Bouthillette¹; Buguo Wang²; Sheng-Qi Wang²; Robert Lancto²; ¹Air Force Research Laboratory, Sensors Direct., AFRL/SNHC, 80 Scott Dr., Hanscom AFB, MA 01731 USA; ²Solid State Scientific Corporation, 27-2 Wright Rd., Hollis, NH 03049 USA

10:40 AM Student

U7, Bulk GaN Growth by Sublimation: Phanikumar Konkakapa¹; *Huaqiang Wu*¹; Yuri Makarov²; Michael G. Spencer¹; ¹Cornell University, Elect. & Computer Engrg., 401 Phillips Hall, Ithaca, NY 14853 USA; ²Semiconductor Technology Research, Inc., Richmond, VA 23255 USA

11:00 AM

U8, Characterization of AlInGaIn Based Heterostructures Grown by Migration Enhanced Metalorganic Chemical Vapor Deposition: *Qhalid Fareed*¹; Jianping Zhang¹; Remis Gaska¹; Ibrahim Yilmaz²; Gintautas Tamulaitis²; Michael S. Shur²; M. Asif Khan³; ¹Sensor Electronic Technology Inc., 1195 Atlas Rd., Columbia, SC 29209 USA; ²Rensselaer Polytechnic Institute, Troy, NY 12180 USA; ³University of South Carolina, Dept. of Elect. Engrg., Columbia, SC 29208 USA

11:20 AM

U9, Using Optical Reflectance to Quantify GaN Evolution on Sapphire: *D. D. Koleske*¹; M. E. Coltrin¹; K. C. Cross¹; M. J. Russell¹; A. A. Allerman¹; ¹Sandia National Laboratories, Albuquerque, NM USA

Session V: Surface Engineering and Thin-Film Transistor Performance

Thursday AM
June 24, 2004

Room: 101
Location: DeBartolo Hall

Session Chairs: William S. Wong, Xerox Corporation, Palo Alto Rsch. Ctr., Palo Alto, CA 94304 USA; Dan Frisbie, University of Minnesota, MN USA

8:20 AM Invited

V1, Pentacene Thin Film Transistors and Integrated Circuits: Performance, Stability, and Operating Voltage: *Hagen Klauk*¹; Marcus Halik¹; Ute Zschieschang¹; Günter Schmid¹; Christine Dehm¹; ¹Infineon Technologies, New Memory Platforms, Matls. & Tech., Paul-Gossen-Str. 100, Erlangen 91052 Germany

9:00 AM Student

V2, Pentacene OTFT with Parylene Active Layer Patterning and Passivation: *Lisong Zhou*¹; Thomas N. Jackson¹; ¹Pennsylvania State University, Elect. Engrg., 121 Elect. Engrg. E., Univ. Park, PA 16802 USA

9:20 AM

V3, Gate Dielectric Surface Modification for Controlling the Threshold Voltage and Subthreshold Characteristics of OTFTs: Kurt P. Perstich¹; Daniel Oberhoff¹; *David J. Gundlach*¹; Bertram Batlogg¹; ¹Laboratory for Solid State Physics, ETH Zurich, HPF-F9, Zurich 8093 Switzerland

9:40 AM

V4, Organic Field-Effect Transistors Prepared by Ink-Jet-Printing and Spin-Coating from Different Solutions of Poly-3-Octylthiophene: *Matthias Ploetner*¹; Thomas Wegener²; Stefan Richter¹; Steffen Howitz²; Wolf-Joachim Fischer¹; ¹Dresden University of Technology, IHM, Dresden D-01062 Germany; ²GeSiM, Rossendorf, Großberkmannsdorf D-01454 Germany

10:00 AM Break**10:20 AM Student**

V5, Low Temperature a-Si:H TFT on Polymer Substrates with Improved Stability: *Lisong Zhou*¹; Thomas N. Jackson¹; ¹Pennsylvania State University, Elect. Engrg., 121 Elect. Engrg. E., Univ. Park, PA 16802 USA

10:40 AM Student

V6, Improved Solution-Deposited OTFT Performance by Dielectrics and Electrode Surface Treatments: *Chung-Chen Kuo*¹; Sungkyu Park¹; E. Bullock²; John E. Anthony²; Thomas N. Jackson¹; ¹Pennsylvania State University, Dept. of Elect. Engrg., 121 Elect. Engrg. E. Bldg., Univ. Park, PA 16802 USA; ²University of Kentucky, Dept. of Chmst., Lexington, KY 40506 USA

11:00 AM

V7, Control of Transport by Self-Assembled-Monolayers in Organic Field-Effect Transistors: *Shin-ichiro Kobayashi*¹; ¹Tohoku University, Inst. for Matls. Rsch., Iwasa Lab., Katahira, Aoba-ku, Sendai City, Miyagi prefecture 2-1-1 Japan

11:20 AM

V8, Microcantilever Arrays as Biological and Chemical Sensors: *Steven L. Tripp*¹; Babita Dhayal¹; Ronald Reifenger¹; ¹Purdue University, Dept. of Physics & Ctr. for Sensing Sci. & Tech., 525 Northwestern Ave., W. Lafayette, IN 47907 USA

11:40 AM Student

V9, Controlling Kinesin-Microtubule Biomolecular Nanomotors: *Ying-Ming Huang*¹; Maruti Uppalapati²; Thomas N. Jackson¹; William O. Hancock³; ¹Pennsylvania State University, Dept. of Elect. Engrg., 121 Elect. Engrg. E., Univ. Park, PA 16802 USA; ²Pennsylvania State University, Dept. of Bioengrg., 218 Hallowell Bldg., Univ. Park, PA 16802 USA

Session W: Mismatched Materials: Metamorphic and Growth on Templates

Thursday AM Room: 129
June 24, 2004 Location: DeBartolo Hall

Session Chairs: David Wilt, NASA, Glenn Rsch. Ctr., Cleveland, OH 44135-3127 USA; Ralph Dawson, University of New Mexico, Albuquerque, NM 87106 USA

8:20 AM Student

W1, Extended Defect Microstructure of Metamorphic Buffer Layers Based on AlGaSb and InAsP: *G. Suryanarayanan*¹; A. A. Khandekar²; T. F. Kuech³; S. E. Babcock⁴; P. W. Deelman⁵; R. D. Rajavel⁶; K. Elliott⁷; D. H. Chow⁸; ¹University of Wisconsin, Matls. Sci. Prog., 1509 Univ. Ave., #201A MSE Bldg., Madison, WI 53706 USA; ²University of Wisconsin, Dept. of Chem. Engrg., 1415 Engrg. Dr., Madison, WI 53706 USA; ³University of Wisconsin, Dept. of Chem. Engrg. & Matls. Sci. Prog., 1415 Engrg. Dr., Madison, WI 53706 USA; ⁴University of Wisconsin, Dept. of Matls. Sci. & Engrg. & Matls. Sci. Prog., 1509 Univ. Ave., Madison, WI 53706 USA; ⁵HRL Laboratories, RL61B, 3011 Malibu Canyon Rd., Malibu, CA 90265 USA

8:40 AM

W2, Comparison of Mixed Anion, InAsP and Mixed Cation, InAlAs Metamorphic Buffers Grown by MBE on InP Substrates and Device Implications: *Mantu K. Hudait*¹; Yong Lin¹; Steven A. Ringel¹; ¹Ohio State University, Elect. Engrg., 205 Dreese Lab., 2015 Neil Ave., Columbus, OH 43210 USA

2:10 PM Student

W3, Doping Studies in Metamorphic AlSb and InAlSb Films: *Peter O. Hill*¹; Sanjay Krishna¹; L. R. Dawson¹; Philip Dowd¹; ¹University of New Mexico, Ctr. for High Tech. Matls., 1313 Goddard SE, Albuquerque, NM 87106 USA

9:20 AM

W4, Surface Reconstruction Domains During the Growth and Annealing of InGaAs Alloys: *Alex Riposan*¹; Brad G. Orr²; Chris Pearson³; ¹University of Michigan, Matls. Sci. & Engrg., 2200 H.H. Dow Bldg., Ann Arbor, MI 48109 USA; ²University of Michigan, Applied Physics, 1115 Aberdeen Dr., Ann Arbor, MI 48103 USA; ³University of Michigan, CSESP, 303 E. Kearsley St., Flint, MI 48502 USA

9:40 AM Student

W5, Development of Metamorphic Buffers on InP for 6.00 Å Narrow Bandgap Heterojunction Bipolar Transistors: *Randy Sandhu*¹; A. Cavus¹; C. Monier¹; M. Lange¹; A. Noori²; S. Hayashi²; M. Wojtowicz¹; T. Block¹; M. Goorsky²; A. Gutierrez-Aitken¹; ¹Northrop Grumman Space Technology, Semiconductor Matls., R6/2134D, One Space Park, Redondo Beach, CA 90278 USA; ²University of California, Matl. Sci. & Engrg., Los Angeles, CA USA

10:00 AM Break

10:20 AM

W6, Strain Relief of In_xGa_{1-x}As Selectively Grown on Nanoscale SiO₂-Patterned GaAs(001) by Molecular Beam Epitaxy: *S. C. Lee*¹; L. R. Dawson¹; B. Pattada¹; S. R.J. Brueck¹; ¹University of New Mexico, Ctr. for High Tech. Matls. & Dept. of Elect. & Computer Engrg., 1313 Goddard, SE, Albuquerque, NM 87106 USA

10:40 AM

W7, Epitaxial Lateral Overgrowth of InAs on W Masks: *Lars-Erik M. Wernersson*¹; Jonas Lembke¹; Bo Martinsson¹; Erik Lind¹; Werner Seifert¹; ¹Lund University, Solid State Physics, Box 118, Lund S-22100 Sweden

11:00 AM Student

W8, Origin of Multiply-Tilted Grains in Conventional and Lateral Epitaxial Overgrowth of InAs Thin Films on (100) GaAs by MOCVD: *A. A. Khandekar*¹; G. Suryanarayanan²; S. E. Babcock³; T. F. Kuech⁴; ¹University of Wisconsin, Dept. of Chem. & Bio. Engrg., 1415 Engrg. Dr., Madison, WI 53706 USA; ²University of Wisconsin, Matls. Sci. Prog., 1509 Univ. Ave., Madison, WI 53706 USA; ³University of Wisconsin, Dept. of Matls. Sci. & Engrg. & Matls. Sci. Prog., 1509 Univ. Ave., Madison, WI 53726 USA; ⁴University of Wisconsin, Dept. of Chem. & Bio. Engrg. & Matls. Sci. Prog., 1415 Engrg. Dr., Madison, WI 53726 USA

11:20 AM Student

W9, Lateral Growth Behavior of GaSb by Metal Organic Vapor Phase Epitaxy: *Brian E. Hawkins*¹; Thomas F. Kuech¹; ¹University of Wisconsin, Dept. of Chem. & Bio. Engrg., 1415 Engineering Dr., Madison, WI 53706 USA

11:40 AM

W10, Room-Temperature Yellow-Amber Emission from InGaP Quantum Wells Grown on an InGaP Metamorphic Buffer Layer on GaP(100) Substrates: *Vladimir A. Odnoblyudov*¹; Charles W. Tu¹; ¹University of California, Elect. & Computer Engrg., 9500 Gilman Dr., La Jolla, CA 92093-0407 USA

Session X: Spin Injection, Spin Transport and Magnetic Anisotropy

Thursday PM Room: 102
June 24, 2004 Location: DeBartolo Hall

Session Chairs: Chris Palmstrøm, University of Minnesota, Minneapolis, MN 55455 USA; Tomasz Wojtowicz, University of Notre Dame, Notre Dame, IN 46556 USA

1:30 PM

X1, Spin Injection from Fe₃Si into GaAs: *Atsushi Kawaharazuka*¹; Manfred Ramsteiner¹; Jens Herfort¹; Hans-Peter Schönherr¹; Helmar Kostial¹; Klaus H. Ploog¹; ¹Paul-Drude-Institut für Festkörperelektronik, Hausvogteiplatz 5-7, Berlin 10117 Germany

1:50 PM

X2, Fabrication and Characterization of an InGaAs Channel Spin Transistor with Fe Electrodes as Spin Injector/Detector: *Kanji Yoh*¹; Zatur Mufida¹; Marhoun Ferhat²; Alexandru Riposan³; Joanna Mirecki Millunchick³; ¹Hokkaido University, RCIQE, N13,W8, Kita-ku, Sapporo 060-8628 Japan; ²Japan Science Technology Agency Japan; ³University of Michigan, Matls. Sci. & Engrg., Ann Arbor, MI 48109 USA

2:10 PM

X3, Point Contact Spin Spectroscopy of Ferromagnetic MnAs and GaMnAs Epitaxial Films: *B. Nadgorny*¹; R. P. Panguluri¹; K. C. Ku²; S. H. Chun²; N. Samarth²; I. I. Mazin³; ¹Wayne State University, Physics, 666 W. Hancock, Detroit, MI 48201 USA; ²Pennsylvania State University, Physics & Matls. Rsch. Inst., Univ. Park, PA 16802 USA; ³Naval Research Laboratory, Ctr. for Computational Matls. Sci., Washington, DC USA

2:30 PM

X4, Magnetic Properties of MnAs/GaAs(001) at the Structural Phase Transition: *A. Ney*¹; T. Hesjedal²; C. Pampuch²; A. K. Das²; L. Daweritz²; T. Tolinski³; J. Lindner³; K. Lenz³; K. Baberschke³; R. Koch²; K. H. Ploog²; ¹Stanford University, Solid State & Photonics Lab., CIS-X 310, Stanford, CA 94305 USA; ²Paul-Drude-Institute for Solid State Electronics, Hausvogteiplatz 5-7, Berlin D-10117 Germany; ³Freie Universität Berlin, Inst. für Experimentalphysik, Arnimallee 14, Berlin D-14195 Germany

2:50 PM

X5, Ferromagnet/DMS Hybrid Structures: Low-Dimensional Magnetic Traps: *P. Redlinski*¹; T. Wojtowicz¹; T. Rappoport¹; A. Libal¹; J. K. Furdyna¹; B. Janko¹; ¹University of Notre Dame, Physics, 225 Nieuwland Sci. Hall, Notre Dame, IN 46556 USA

3:10 PM Break

3:30 PM

X6, Spin-Polarized Ballistic Transport in InSb/InAlSb Heterostructures: *Hong Chen*¹; J. A. Peters¹; J. J. Heremans¹; N. Goel²; S. J. Chung²; M. B. Santos²; ¹Ohio University, Dept. of Physics & Astron., & The Nanoscale & Quantum Phenomena Inst., Clip-

per Labs., Athens, OH 45701 USA; ²University of Oklahoma, Dept. of Physics & Astron., & Ctr. for Semiconductor Physics in Nanostruct., Norman, OK 73019 USA

3:50 PM Student

X7, Magnetotransport Studies of Magnetic Anisotropy in Strain-Engineered InMnAs Ferromagnetic Layers: *W. L. Lim*¹; X. Liu¹; Z. Ge¹; S. Shen¹; T. Wojtowicz²; J. K. Furdyna¹; M. Dobrowolska¹; ¹University of Notre Dame, Dept. of Physics, 225 Nieuwland Sci. Hall, Notre Dame, IN 46556 USA; ²Polish Academy of Sciences, Inst. of Physics, 02-668 Warsaw Poland

4:10 PM

X8, Magneto-Optical Studies of the Magnetic Anisotropy in III-Mn-As Ferromagnetic Semiconductors: *M. Kutrowski*¹; L. Titova¹; K. Yee¹; W. L. Lim¹; X. Liu¹; T. Wojtowicz¹; J. K. Furdyna¹; M. Dobrowolska¹; ¹University of Notre Dame, Physics, 225 Nieuwland Sci. Hall, Notre Dame, IN 46556 USA

4:30 PM Student

X9, Magneto-Optical Activity of InMnAs Epitaxial Films at Room Temperature: *Philip T. Chiu*¹; *Steven J. May*¹; Bruce W. Wessels¹; ¹Northwestern University, Matls. Sci. & Engrg., 2220 Campus Dr., Cook Hall, Evanston, IL 60208 USA

4:50 PM Student

X10, Magnetic Circular Dichroism in GaMnAs/ZnSe Hybrid Structures with Be Co-Doping: *Raja Chakarvorty*¹; K. J. Yee¹; X. Liu¹; P. Redlinski¹; Z. Ge¹; S. Shen¹; M. Kutrowski²; L. Titova¹; T. Wojtowicz²; J. K. Furdyna¹; B. Janko¹; M. Dobrowolska¹; ¹University of Notre Dame, Notre Dame, IN USA; ²University of Notre Dame, Notre Dame, IN, USA & Polish Academy of Sciences, Inst. of Physics, Warsaw Poland

Session Y: Nanotubes & Nanowires II

Thursday PM Room: 141
June 24, 2004 Location: DeBartolo Hall

Session Chairs: Zhou Chongwu, University of Southern California, Dept. of Electrophysics, Los Angeles, CA USA; Kazuhiko Matsumoto, Osaka University, Inst. of Scientific & Industrial Rsch., Ibaraki, Osaka 565-0871 Japan

1:30 PM Student

Y1, P Type Semiconductive Carbon Nanotube for Quantum Wire: *Takafumi Kamimura*¹; Chan Kyeong Hyon²; Atsuhiko Kojima²; Masatoshi Maeda³; Kazuhiko Matsumoto¹; ¹Osaka University, Grad. Sch. of Engrg. Sci., 8-1, Mihogaoka, Ibaraki-shi, Osaka 567-0047 Japan; ²CREST/JST, 1-1-1, Umezono, Tsukuba, Ibaraki 305-8568 Japan; ³University of Tsukuba, Grad. Sch. of Pure & Applied Scis., 1-1-1, Tennoudai, Tsukuba, Ibaraki 305-8571 Japan

1:50 PM Student

Y2, Transient Photobleaching in Isolated Single-Walled Carbon Nanotubes: *Michael S. Arnold*¹; Song Lan²; Jay E. Sharping²; Samuel I. Stupp¹; Prem Kumar²; Mark C. Hersam¹; ¹Northwestern University, Matls. Sci. & Engrg., 2220 Campus Dr., Evanston, IL 60208-3108 USA; ²Northwestern University, Elect. & Computer Engrg., 2145 Sheridan Rd., Evanston, IL 60208-3118 USA

2:10 PM Student

Y3, Control of Electrical Property of Carbon Nanotube by Oxygen Ion Implantation with Ultra-Low Energy of 25eV: Takushi Kawai¹; Kazuhiro Yamamoto²; Takafumi Kamimura³; Chan-Kyeong Hyon⁴; Atsuhiko Kojima⁴; Kousuke Kurachi⁵; Masatoshi Maeda⁶; Masashi Torigoe¹; Toshio Nemoto⁷; *Kazuhiro Matsumoto*⁸; ¹Meiji University, Sch. of Sci. & Tech., 1-1-1 Higashimita, Tama, Kawasaki, Kanagawa 214-8571 Japan; ²National Institute of Advanced Industrial Science and Technology, Rsch. Ctr. for Advd. Carbon Matls., 1-1-1, Umezono, Tsukuba, Ibaraki 305-8568 Japan; ³Osaka University, Grad. Sch. of Engrg. Sci., 8-1, Mihogaoka, Ibaraki, Osaka 567-0047 Japan; ⁴CREST/JST; ⁵Meiji University, Grad. Sch. of Sci. & Tech., 1-1-1 Higashimita, Tama, Kawasaki, Kanagawa 214-8571 Japan; ⁶University of Tsukuba, Grad. Sch. of Pure & Applied Sci., 1-1-1, Tennoudai, Tsukuba, Ibaraki 305-8577 Japan; ⁷Meiji University, 1-1-1 Higashimita, Tama, Kawasaki, Kanagawa 214-8571 Japan; ⁸Osaka University, ISIR, 8-1, Mihogaoka, Ibaraki, Osaka 567-0047 Japan

2:30 PM

Y4, Simulations of Electronic Transport in Single-Wall and Multi-Wall Carbon Nanotubes: *Alexandre Mayer*¹; ¹Facultés Universitaires Notre-Dame de la Paix, Lab. de Physique du Solide, Rue de Bruxelles, 61, Namur 5000 Belgium

2:50 PM**Y5, Late News****3:10 PM Break****3:30 PM Student**

Y6, Quantum Confinement Observed in Ultrafine ZnO and ZnO/ZnMgO Coaxial Nanorod Heterostructures: *Won Il Park*¹; Gyu-Chul Yi¹; Miyoung Kim²; ¹Pohang University of Science and Technology (POSTECH), Dept. of Matls. Sci. & Engrg., San 31, Hyoja-dong, Namgu, Pohang, Kyungbuk 790-784 Korea; ²Samsung Advanced Institute of Technology (SAIT), PO Box 111, Suwon 440-600 Korea

3:50 PM

Y7, Rational Growth of Branched and Hyper-Branched Nanowire Structures: *Deli Wang*¹; Fang Qian¹; Chen Yang¹; Zhaohui Zhong¹; Charles M. Lieber¹; ¹Harvard University, Chmst. & Chem. Bio. Dept., 12 Oxford St., Cambridge, MA 02138 USA

4:10 PM Student

Y8, Heteroepitaxial Fabrication and Structural Characterizations of Ultrafine GaN/ZnO Coaxial Nanorod Heterostructures: *Sung Jin An*¹; Won Il Park¹; Gyu-Chul Yi¹; Miyoung Kim²; ¹Pohang University of Science and Technology (POSTECH), Dept. of Matls. Sci. & Engrg., San 31, Hyoja-dong, Nam-gu, Pohang, Kyungbuk 790-784 Korea; ²Samsung Advanced Institute of Technology (SAIT), PO Box 111, Suwon 440-600 Korea

4:30 PM

Y9, Ultrathin Epitaxial Metal Nanowires on Silicon (001) and (111): Tammo Block¹; Svend Vagt¹; Volkmar Zielasek¹; *Herbert Pfñür*¹; ¹University of Hannover, Inst. of Solid State Physics, Surface Sci. Sect., Appelstr. 2, D-30419 Hannover Germany

4:50 PM Student

Y10, Fabrications and Characterizations of Electroluminescent Devices Using n-ZnO Nanorod Arrays Vertically Grown on p-GaN Epilayers: *Won Il Park*¹; Gyu-Chul Yi¹; ¹Pohang University of Science and Technology (POSTECH), Dept. of Matls. Sci. & Engrg., San 31, Hyoja-dong, Pohang, Kyungbuk 790-784 Korea

Session Z: Semiconductor Nanostructures: Materials to Devices

Thursday PM
June 24, 2004

Room: 136
Location: DeBartolo Hall

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

1:30 PM

Z1, Near-Infrared in Vivo Imaging Using Quantum Dots: *Sungjee Kim*¹; ¹California Institute of Technology, Dept. of Applied Physics, MC 128-95, Watson Bldg., 1200 E. California Blvd., Pasadena, CA 91125 USA

2:10 PM Student

Z2, Solution Phase Synthesis of Straight and Branched CdSe Nanowires: *Katherine Leigh Richter*¹; James W. Grebinski¹; Jing Zhang²; Thomas H. Kosel²; Masaru K. Kuno¹; ¹University of Notre Dame, Dept. of Chmst. & Biochmst., 251 Nieuwland Sci. Hall, Notre Dame, IN 46556 USA; ²University of Notre Dame, Dept. of Elect. Engrg., 275 Fitzpatrick Hall, Notre Dame, IN 46556 USA; ³University of Notre Dame, Dept. of Elect. Engrg., 275 Fitzpatrick Hall, Notre Dame, IN 46556 USA

2:30 PM

Z3, Metal-Semiconductor Transition in Armchair Nanotubes: Possibilities for Metallic FET: *Slava V. Rotkin*¹; Karl Hess¹; ¹University of Illinois, Beckman Inst. for Advd. Sci. & Tech., 405 N. Mathews, Urbana, IL 61801 USA

2:50 PM

Z4, Size and Position-Controlled Zinc Oxide Nanodot Arrays with Focused Ion Beam Nanopatterning of Substrates: *Shizuo Fujita*¹; Sang-Woo Kim²; Masaya Ueda²; Shigeo Fujita²; ¹Kyoto University, Internatl. Innovation Ctr., Yoshida honmachi, Sakyo-ku, Kyoto, Kyoto 606-8501 Japan; ²Kyoto University, Dept. Elect. Sci. & Engrg., Kyotodaigaku-katsura, Nishigyo-ku, Kyoto, Kyoto Japan

3:10 PM Break

3:30 PM Student

Z5, Defect-Free 50-Layer Strain-Balanced InAs Quantum Dots Grown on AlGaInAs/InP for Infrared Photodetector Applications: *Zhenhua Zhang*¹; Chaofeng Xu¹; Kuang-Chien Hsieh¹; Keh-Yung Cheng¹; ¹University of Illinois, Dept. of Elect. & Computer Engrg., 150 Micro & Nanotech. Lab., 208 N. Wright St., Urbana, IL 61801 USA

3:50 PM

Z6, Modification of Band Structures in Stacked InAs/GaAs Quantum Dot Systems by the Control of Mismatch Strain: *Woong Lee*¹; Jae-Min Myoung¹; ¹Yonsei University, Matls. Sci. & Engrg., 134 Shinchon-dong, Seoul 120-749 S. Korea

4:10 PM Student

Z7, Selectivity Between Quantum Dots and Dashes on InP and GaAs Based on Lattice Mismatch and Surface Migration: *G. Balakrishnan*¹; Shenghong Huang¹; L. R. Dawson¹; H. Xu²; D. L. Huffaker¹; ¹University of New Mexico, CHTM, 1313, Goddard SE, Albuquerque, NM 87106 USA; ²University of New Mexico, Earth & Planetary Scis., Albuquerque, NM 87131 USA

4:30 PM

Z8, Red Light Emission by Electroluminescence from InP Quantum Dots on GaP(100): *F. Hatami*¹; W. T. Masselink¹; V. Lordi²; J. S. Harris²; ¹Humboldt-Universität zu Berlin, Dept. of Physics, Newtonstr. 15, 12489 Berlin Germany; ²Stanford University, Dept. of Elect. Engrg., Stanford, CA 94305 USA

4:50 PM

Z9, Late News

Session AA: Dilute Nitrides

Thursday PM
June 24, 2004

Room: 138
Location: DeBartolo Hall

Session Chairs: Charles Tu, University of California, La Jolla, CA 92093-0407 USA; Luke Mawst, University of Wisconsin, Madison, WI 53706 USA

1:30 PM Student

AA1, Near-Field Scanning Optical Microscopy of Compositional Fluctuations in Dilute Nitride Alloys: *Kai Sun*¹; Alexander M. Mintairov¹; Thomas H. Kosel¹; Victor M. Ustinov²; Gregory M. Peake³; James L. Merz¹; ¹University of Notre Dame, Dept. of Elect. Engrg., Notre Dame, IN 46556 USA; ²Ioffe Physico-Technical Institute, 26 Polytechnicheskaya, St. Petersburg 194021 Russia; ³Sandia National Laboratory, Albuquerque, NM 87185 USA

1:50 PM

AA2, Identification of Nonradiative Recombination Centers in Ga(As,N) by Raman Spectroscopy: *Manfred E. Ramsteiner*¹; De-sheng Jiang²; Gregor Mussler¹; James S. Harris³; Klaus H.

Ploog¹; ¹Paul Drude Institute for Solid State Electronics, Hausvogteiplatz 5-7, Berlin 10117 Germany; ²NLSM, Inst. of Semiconductors, Beijing 100083 China; ³Stanford University, Solid State & Photonics Lab., Stanford, CA 94305 USA

2:10 PM

AA3, Thermal Annealing Effects and Local Atomic Configurations in GaInNAs Thin Films by Fluorescence X-Ray Absorption Fine Structure Spectroscopy: *Kazuyuki Uno*¹; Masako Yamada¹; Toshiyuki Takizawa²; Ichiro Tanaka¹; Osamu Ohtsuki¹; ¹Wakayama University, Systems Eng., Sakaedani 930, Wakayama 640-8510 Japan; ²Matsushita Electric Ind., Saiwaicho 1-1, Takatsuki, Osaka 569-1193 Japan

2:30 PM Student

AA4, Transmission Electron Microscopy (TEM) Structural Characterization of GaInNAs and GaInNAsSb Quantum Wells Grown by Molecular Beam Epitaxy (MBE): *Tihomir Lubenov Gugov*¹; Homan Yuen¹; Seth Bank¹; Mark Wistey¹; Vincent Gambin¹; James S. Harris¹; ¹Stanford University, Solid State & Photonics Lab., 121 Campus Dr., Lyman Apt. 1101B, Stanford, CA 94305 USA

2:50 PM Student

AA5, Electroabsorption and Band Edge Optical Properties of GaInNAsSb Quantum Wells Around 1550nm: *Vincenzo Lordi*¹; Homan B. Yuen¹; Seth R. Bank¹; Mark A. Wistey¹; James S. Harris¹; ¹Stanford University, Solid State & Photonics Lab., CISX B113-17, 330 Serra Mall, Stanford, CA 94305-4075 USA

3:10 PM Break

3:30 PM

AA6, Effects of Arsenic Species and Si-Doping on Nitrogen Incorporation in GaAsN Films: *M. Reason*¹; *H. A. McKay*¹; X. Weng¹; N. Rudawski¹; W. Ye¹; R. S. Goldman¹; V. Rotberg²; ¹University of Michigan, Dept. of Matls. Sci. & Engrg., 2300 Hayward St., H. H. Dow Bldg., Ann Arbor, MI 48109-2136 USA; ²University of Michigan, Dept. of Nucl. Engrg. & Radiological Scis., Ann Arbor, MI 48109-2136 USA

3:50 PM Student

AA7, Temperature Dependent Behavior of GaInNAs(Sb) Alloys Grown on GaAs: *Seth R. Bank*¹; Vincenzo Lordi¹; Mark A. Wistey¹; Homan B. Yuen¹; James S. Harris¹; ¹Stanford University, Solid State & Photonics Lab., 126X CIS-X, Via Ortega, Stanford, CA 94305 USA

4:10 PM Student

AA8, Ion Damage in Dilute Nitride Growth: Effect of Deflector Plate Voltage: *Michael M. Oye*¹; Jason M. Reifsnider²; Sridhar Govindaraju¹; Archie L. Holmes²; ¹University of Texas, Microelect. Rsch. Ctr. & Texas Matls. Inst., MS R9900, Austin, TX 78712 USA; ²University of Texas, Microelect. Rsch. Ctr. & Dept. of Elect. & Computer Engrg., Austin, TX 78712 USA

4:30 PM

AA9, Improving Optical Properties of 1550-nm GaInNAs/GaAs Multiple Quantum Wells by GaInNAs Quaternary Barrier and Space Layer: *H. Y. Liu*¹; M. Hopkinson¹; P. Navaretti¹; M. Gutierrez¹; J. S. Ng¹; J. P.R. David¹; H. D. Sun²; A. H. Clark²; M. D. Dawson²; ¹University of Sheffield, EPSRC Natl. Ctr. for III-V Tech., Dept. of Elect. & Elect. Engrg., Sheffield S1 3JD UK; ²University of Strathclyde, Inst. of Photonics, 106 Rottenrow, Glasgow G4 0NW UK

Session BB: Contacts to Wide Bandgap Semiconductors

Thursday PM Room: 155
June 24, 2004 Location: DeBartolo Hall

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

1:30 PM Student

BB1, Low Resistance Ohmic Contacts to Si Implanted GaN and Application in AlGaIn/GaN HEMTs: *Haijiang Yu*¹; Lee McCarthy²; Huili Xing²; Likun Shen²; Stacia Keller²; Steve Denbaars¹; James Speck¹; Umesh Mishra²; ¹University of California, Mats. Dept., Santa Barbara, CA 93106 USA; ²University of California, ECE Dept., Santa Barbara, CA 93106 USA

1:50 PM Student

BB2, Non-Polar GaN: p-Type Doping and Ohmic Contact Technology: *John Simon*¹; Debdeep Jena¹; Arpan Chakraborty²; Huili Xing²; Umesh Mishra²; ¹University of Notre Dame, Dept. of Elect. Engrg., 275 Fitzpatrick, Notre Dame, IN 46556 USA; ²University of California, Dept. of ECE, Santa Barbara, CA 93106 USA

2:10 PM

BB3, Ir-Based Low Resistance Ohmic Contacts on p-GaN: *J. W. Bae*¹; T. Hossain¹; I. Adesida¹; K. H. Bogart²; A. A. Allerman²; D. Koleske²; ¹University of Illinois, Micro & Nanotech. Lab. & Dept. of Elect. & Computer Engrg., 208 N. Wright St., Urbana, IL 61801 USA; ²Sandia National Laboratories, Albuquerque, NM 87185 USA

2:30 PM Student

BB4, Effects of Reactive Ion Plasma Treatment on Ohmic Contacts to n-GaN and n-Al_{0.55}Ga_{0.45}N: *Fatih M. Mohammed*¹; Deepak Selvanathan¹; Ilesanmi Adesida¹; K. H. Bogart²; A. A. Allerman²; ¹University of Illinois, Micro & Nanotech. Lab., Urbana, IL 61801 USA; ²Sandia National Laboratories, Albuquerque, NM 87185 USA

2:50 PM

BB5, The Effect of Substrate Bias During Plasma Etching on Metal Contact Performance for High % Al n-AlGaIn Thin Films and LEDs: *K. H.A. Bogart*¹; A. J. Fischer¹; A. A. Allerman¹; D. D. Koleske¹; ¹Sandia National Laboratories, Albuquerque, NM USA

3:10 PM Break

3:30 PM Student

BB6, Formation of Low Resistance Contacts to Digital Alloys of n-Al_{0.7}Ga_{0.3}N: *Jonshin Yun*¹; Kisik Choi¹; Kaveri Mathur¹; Vladimir Kuryatkov¹; Boris Borisov¹; Gela Kipshidze¹; Sergey Nikishin¹; Henryk Temkin¹; ¹Texas Tech University, Nano Tech

Ctr./Elect. & Computer Engrg., Box 43102, MS-3102, Lubbock, TX 79409 USA

3:50 PM Student

BB7, Fabrication of Light Emitting Diodes Using Low Resistance and Highly Transparent Ni-La Solid Solution Ohmic Contacts to p-Type GaN: June-O Song¹; Dong Seok Leem¹; Tae-Yeon Seong¹; J. S. Kwak²; O. H. Nam²; Y. Park²; ¹Kwangju Institute of Science and Technology, Mats. Sci. & Engrg., 1 Oryongdong Pukgu, Gwangju 500-712 S. Korea; ²Samsung Advanced Institute of Technology, Photonics Lab., Suwon 440-600 S. Korea

4:10 PM Student

BB8, Low Resistance and Highly Reflective MIO/Ag-Based Ohmic Contacts to p-Type GaN for Flip-Chip Light Emitting Diodes: *June-O Song*¹; Dong Seok Leem¹; Tae-Yeon Seong¹; J. S. Kwak²; O. H. Nam²; Y. Park²; ¹Kwangju Institute of Science and Technology, Mats. Sci. & Engrg., 1 Oryongdong Pukgu, Gwangju, Gwangju 500-712 S. Korea; ²Samsung Advanced Institute of Technology, Photonics Lab., Suwon 440-600 S. Korea

4:30 PM Student

BB9, Ohmic and Blocking Contacts to n-Type ZnO (0001) Epitaxial and Bulk Material: *Willie E. Bowen*¹; Timothy E. Murphy¹; Jamie D. Phillips¹; ¹University of Michigan, EECS Dept., 1301 Beal Ave., 2417D EECS Bldg., Ann Arbor, MI 48109-2122 USA

4:50 PM Student

BB10, Ohmic Contact on Nitrogen-Doped UNCD Films and Observation of Conduction Band Offset Between UNCD and Si: *Ningyue Jiang*¹; Zhenqiang Ma¹; ¹University of Wisconsin, Elect. & Computer Engrg. Dept., 1415 Engineering Dr., Madison, WI 53706 USA

Session CC: Transport in Organic Semiconductor Device

Thursday PM Room: 101
June 24, 2004 Location: DeBartolo Hall

Session Chairs: David Gundlach, ETH-Zurich, Zurich Switzerland; Paul Baude, 3M Company, St. Paul, MN 55114 USA

1:30 PM Invited

CC1, Intrinsic Charge Carrier Transport on the Surface of Organic Semiconductors: *V. Podzorov*¹; M. E. Gershenson¹; E. Menard²; J. A. Rogers²; V. C. Sundar³; J. Zaumseil³; ¹Rutgers University, 136 Frelinghuysen Rd., Piscataway, NJ 08854 USA; ²University of Illinois, Urbana, IL 61801 USA; ³Lucent Technologies, Bell Labs., 700 Mountain Ave., Murray Hill, NJ 07974 USA

2:10 PM

CC2, Fabrication and Characterization of Single-Crystal Organic Field Effect Transistors: *Christopher R. Newman*¹; Reid J. Chesterfield¹; Jeffrey A. Merlo¹; C. Daniel Frisbie¹; ¹University of Minnesota, Chem. Engrg., Matls. Sci., 421 Washington Ave. SE, 151 Amundson Hall, Minneapolis, MN 55455 USA

2:30 PM

CC3, Intrinsic Hole Mobility and Temperature-Dependent Trapping in a Regio-Regular Poly(Thiophene): *Alberto Salleo*¹; Armin R. Voelkel¹; Tze Wee Chen²; Michael L. Chabinyc¹; Robert A. Street¹; ¹Palo Alto Research Center, 3333 Coyote Hill Rd., Palo Alto, CA 94304 USA; ²Stanford University, Dept. of Elect. Engrg., Palo Alto, CA 94305 USA

2:50 PM

CC4, Field Effect in Pentacene Single-Crystal/SiO₂/Doped-Si Structures: *J. Takeya*¹; C. Goldmann²; C. Krellner²; S. Haas²; K. P. Pernstich²; B. Batlogg²; T. Nishikawa³; T. Takenobu⁴; S. Kobayashi⁴; T. Shimoda⁴; T. Mitani⁵; Y. Iwasa⁴; ¹CRIEPI, 2-11-1, Iwado-kita, Komae, Tokyo 201-8511 Japan; ²ETH, Lab. for Solid State Physics, Hoenggerberg, Zuerich CH-8093 Switzerland; ³Seiko Epson, Co. Japan; ⁴Tohoku University, IMR, Sendai Japan; ⁵JAIST Japan

3:10 PM Break

3:30 PM Student

CC5, A New Model for an Organic Field-Effect Transistor: *Tae-Ho Jung*¹; Ananth Dodabalapur¹; ¹University of Texas, ECE, Microelect. Rsch. Ctr., Austin, TX 78758 USA

3:50 PM Student

CC6, Alq and TPD Static Induction Transistor with Organic Semiconductors: *Serkan Zorba*¹; Yongli Gao¹; ¹University of Rochester, Physics & Astron., Rochester, NY 14627 USA

4:10 PM Student

CC7, Contact Resistance in Pentacene Organic Thin-Film Transistors: *Paul V. Pesavento*¹; Reid J. Chesterfield¹; Christopher R. Newman¹; C. Daniel Frisbie¹; ¹University of Minnesota, Chem. Engrg. & Matls. Sci., 421 Washington Ave. SE, Amundson Hall, Minneapolis, MN 55455 USA

4:30 PM

CC8, Fa Electron Currents in Submicron Pentacene Transistors: *J. Jo*¹; J. J. Heremans¹; F. Bradbury¹; Hong Chen¹; V. Soghomonian¹; ¹Ohio University, Dept. of Physics & Astron., (on leave from Ajou University, Korea), Clipping Labs., Athens, OH 45701 USA

Session DD: Narrow Bandgap Devices and Materials

Thursday PM

Room: 129

June 24, 2004

Location: DeBartolo Hall

Session Chairs: Robert M. Biefeld, Sandia National Laboratories, Albuquerque, NM 87185-0601 USA; Christine A. Wang, Massachusetts Institute of Technology, Lincoln Lab., Lexington, MA 02420-9108 USA

1:30 PM

DD1, High Quality InSb Photodiodes Structures Grown by MOVPE: *Ariel Sher*¹; Yossi Paltiel¹; Arie Raizman¹; Sergey Shusterman¹; Moti Katz¹; Avigdor Zussman¹; ¹Soreq NRC, Electro-Optics, Yavne 81800 Israel

1:50 PM

DD2, MBE Growth of 6.2 Å InAsSb High Electron Mobility Transistors: *Brad P. Tinkham*¹; Brian R. Bennett¹; J. Brad Boos¹; Richard Magno¹; ¹Naval Research Laboratory, Elect. Tech. Div., Code 6876, 4555 Overlook Ave., Washington, DC 20375 USA

2:10 PM

DD3, Effects of Buffer Layers on the Structural and Electronic Properties of InSb Films: *Xiaojun Weng*¹; N. G. Rudawski¹; D. L. Partin²; J. P. Heremans²; Rachel S. Goldman¹; ¹University of Michigan, Matls. Sci. & Engrg., 2300 Hayward St., Ann Arbor, MI 48109-2136 USA; ²Delphi Research and Development Center, Warren, MI 48090-9055 USA

2:30 PM Student

DD4, Zn Doping of p-Type GaAsSb from Spin-On Glass Dopant Sources: *Shishir Rai*¹; P. Fay¹; B. Han²; N. Pan²; ¹University of Notre Dame, Dept. of Elect. Engrg., 275 Fitzpatrick Hall, Notre Dame, IN 46556 USA; ²MicroLink Devices, 6457 Howard St., Niles, IL 60714 USA

2:50 PM

DD5, Low Resistance Ohmic Contacts on p-GaAsSb: *J. H. Jang*¹; H. K. Cho²; J. W. Bae²; I. Adesida²; N. Pan²; ¹Kwangju Institute of Science and Technology, Dept. of Info. & Communications, 1 Oryong-dong Puk-ku, Kwangju 500-712 S. Korea; ²University of Illinois, Dept. of Elect. & Computer Engrg. & Micro & Nanotech. Lab., 208 N. Wright St., Urbana, IL 61801 USA; ³MicroLink Devices, 6457 Howard St., Niles, IL 60714 USA

3:10 PM Break

3:30 PM Student

DD6 Interwell Excitonic Effect in GaNAs/GaAsSb Type-II Active Regions for Long Wavelength Operation: *Hyunsoo Yang*¹; Vincenzo Lordi¹; James S. Harris¹; ¹Stanford University, Solid States & Photonics Lab., CISX126, Via Ortega, Stanford, CA 94305 USA

3:50 PM Student

DD7, Measurements of Recombination Rates in Low-Doped Epitaxial GaInAsSb Lattice-Matched to GaSb by Frequency Response of Photoluminescence: *D. Donetsky*¹; S. Anikeev¹; G. Belenky¹; S. Luryi¹; C. A. Wang²; D. A. Shiau²; M. Dashiell³; J. Beausang³; G. Nichols³; ¹State University of New York, Elect. & Computer Engrg., Stony Brook, NY 11794 USA; ²Massachusetts Institute of Technology, Lincoln Lab., Lexington, MA 02420 USA; ³Lockheed Martin Corporation, Schenectady, NY 12301 USA

4:10 PM

DD8, Auger and Radiative Recombination Parameters in 0.55 eV InGaAsSb: *Ravi J. Kumar*¹; Ronald J. Gutmann¹; Jose M. Borrego¹; Partha S. Dutta¹; Christine A. Wang²; Gregory Nichols³; ¹Rensselaer Polytechnic Institute, Ctr. for Integrated Elect., CII-6015, 110 8th St., Troy, NY 12180 USA; ²Massachusetts Institute of Technology, Lincoln Lab., Lexington, MA 02420 USA; ³Lockheed Martin, Schenectady, NY 12301 USA

Session EE: Epitaxy for Devices

Friday AM Room: 102
June 25, 2004 Location: DeBartolo Hall

Session Chairs: Chuck Lutz, Kopin Corporation, Tauton, MA 02780 USA; Janet Pan, Yale University, New Haven, CT 06520 USA

8:20 AM Student

EE1, Recombination Lifetime and Internal Quantum Efficiency in Gallium Arsenide Doped Beyond $N_A=1 \times 10^{19}$: *Thomas D. Boone*¹; Jerry M. Woodall¹; ¹Yale University, Elect. Engrg. & Applied Sci., PO Box 208284, New Haven, CT 06520 USA

8:40 AM

EE2, Photoluminescence Due to Be-As_{Ga} Complex in Low-Temperature MBE-Grown Be-doped GaAs: Akira Higuchi¹; Hiroyuki Bando¹; Hiroshi Okamoto¹; Tsuyoshi Okuno²; Yasuaki Masumoto²; ¹Chiba University, Dept. of Matls. Tech., 1-33 Yayoi-cho, Inage-ku, Chiba, Chiba 263-8522 Japan; ²University of Tsukuba, Inst. of Physics, Ibaraki, Tsukuba 305-8571 Japan

9:00 AM

EE3, Gallium-Arsenide Deep-Level Materials for THz and 1.5um Fiber-Optic Applications: *Janet L. Pan*¹; ¹Yale University, Dept. of Elect. Engrg., 15 Prospect St., Rm. 505, New Haven, CT 06511 USA

9:20 AM Student

EE4, Compensation of Interfacial Charges at the Regrowth Interface Between InP Layers: *Yingda Dong*¹; Arthur C. Gosard¹; Mark J.W. Rodwell¹; ¹University of California, Elect. & Computer Engrg. Dept., Santa Barbara, CA 93106 USA

9:40 AM

EE5, Intersubband Emission from MBE-Grown InGaAs-

AlAsSb Quantum Cascade Structures Spanning the ~3-5um Atmospheric Window: *Matthew J. Steer*¹; Dmitry G. Revin²; Luke R. Wilson²; Evgeny A. Zibik²; Richard P. Green²; John W. Cockburn²; Robert J. Airey¹; Mark Hopkinson¹; ¹University of Sheffield, EPSRC Natl. Ctr. for III-V Tech., Mappin Bldg., Mappin St., Sheffield, S. Yorkshire S1 3JD UK; ²University of Sheffield, Dept. of Physics & Astron., Hounsfield Rd., Sheffield, S. Yorkshire S3 7RH UK

10:00 AM Break

10:20 AM Student

EE6, The Sequential LPE and MBE of InAs on GaP - A Hybrid Form of MBE: *An Chen*¹; Aristo Yulius¹; Jerry M. Woodall¹; ¹Yale University, Elect. Engrg., 15 Prospect St., PO Box 208284, New Haven, CT 06511 USA

10:40 AM

EE7, Growth of CaF₂/Si/CaF₂ Resonant-Tunneling Structures by B and Sb Surfactant-Enhanced Epitaxy: Cunrang Wang¹; Bernhard H. Mueller¹; Markus Bierkandt¹; Eberhard Bugiel¹; Tobias Wietler¹; *Karl R. Hofmann*¹; ¹University of Hannover, Inst. for Semiconductor Devices & Elect. Matls., Appelstr. 11A, 30167 Hannover Germany

11:00 AM

EE8, Molecular Beam Epitaxial Growth of Cd-Based II-VI Wide-Band-Gap Compounds on Si: Yuanping Chen¹; *Gregory N. Brill*¹; Paul M. Amirtharaj¹; Nibir K. Dhar¹; ¹Army Research Laboratory, AMSRD-ARL-SE-EI, 2800 Powder Mill Rd., Adelphi, MD 20874 USA

11:20 AM Student

EE9, Epitaxial Growth of FeSi₂Ge₂: Towards a Tunable Silicon Based Electro-Optic Material: *Ryan J. Cottier*¹; Brian P. Gorman¹; Fatima Z. Amir¹; A. Glen Birdwell²; O. Wayne Holland¹; Arup Neogi¹; Chris L. Littler¹; Terry D. Golding¹; ¹University of North Texas, Physics Dept., 211 Ave. A, Denton, TX 76203 USA; ²MEMC Electronic Materials, 6800 Hwy. 75 S., Sherman, TX 75090 USA

Session FF: Defects in SiC

Friday AM Room: 141
June 25, 2004 Location: DeBartolo Hall

Session Chairs: Robert Okojie, NASA, Glenn Rsch. Ctr., Cleveland, OH 44136 USA; Laura Rea, US Air Force Research Laboratory, Wright Patterson AFB, OH 45433-7707 USA

8:20 AM

FF1, Stacking Fault Growth in A-Face SiC PIN Diodes: *R. E. Stahlbush*¹; M. E. Twigg¹; S. M. Bishop²; E. A. Preble²; R. F. Davis²; C. Hallin³; E. Janzen³; ¹Naval Research Laboratory, Code 6881, Washington, DC 20375 USA; ²North Carolina State University, Raleigh, NC 27695 USA; ³Linköping University, Linköping Sweden

8:40 AM

FF2, Stacking Fault Nucleation in 4H-SiC PiN Diodes: *Mark Erickson Twigg*¹; Robert E. Stahlbush¹; K. G. Irvine²; J. J. Sumakeris³; T. P. Chow³; P. A. Lossee⁴; L. Zhu⁴; Y. Tang⁴; W. Wang⁴; ¹Naval Research Laboratory, Code 6812, 4555 Overlook Ave. SW, Washington, DC 20375 USA; ²Cree, Inc., Durham, NC 27703 USA; ³Rensselaer Polytechnic Institute, Troy, NY 12180 USA

9:00 AM

FF3, Cross-Polarization Imaging and Micro-Raman Detection of Defects in the Epitaxy of 4H-SiC: *Orest J. Glembocki*¹; Sharka M. Prokes¹; Robert E. Stahlbush¹; Michael F. MacMillan²; ¹Naval Research Laboratory, Code 6880.1, Washington, DC 20375 USA; ²Dow Corning Corporation, MS CO43D1, 2200 W. Salzburg Rd., Midland, MI 48686-0994 USA

9:20 AM

FF4, A New Approach to Investigate Superscrew Dislocations in Silicon Carbide: *Xianyun Ma*¹; Tangali Sudarshan¹; ¹University of South Carolina, Elect. Engrg. Dept., 301 Main St., Columbia, SC 29208 USA

9:40 AM

FF5, Identification of Dislocations in Diffused 4H-SiC PIN Diodes Using EBIC: *Serguei Ivanovich Maximenko*¹; *Stanislav Ivanovich Soloviev*¹; Tangali S. Sudarshan¹; ¹University of South Carolina, Elect. Engrg., 301S Main St., Columbia, SC 29208 USA

10:00 AM Break

10:20 AM

FF6, High Temperature Operation of SiC Electronics and Sensors: *Ruby N. Ghosh*¹; Peter Tobias¹; ¹Michigan State University, Ctr. for Sensor Mats., 2167 BPS Bldg., E. Lansing, MI 48824-2320 USA

10:40 AM

FF7, Thermally Stimulated Current Spectroscopy of High-Purity Semi-Insulating 4H-SiC Substrates: *Zhaoqiang Fang*¹; David C. Look¹; Laura Polenta²; ¹Wright State University, Semiconductor Rsch. Ctr., Physics Dept., 3640 Colonel Glenn Hwy., Dayton, OH 45435 USA; ²University of Bologna, INFN & Dept. of Physics, Bologna I-40127 Italy

11:00 AM Student

FF8, First Observation of Current Induced Deep-Level Defects in 4H SiC PiN Diodes with Magnetic Resonance: *S. K. Yerkes*¹; P. M. Lenahan¹; R. S. Okojie²; ¹Pennsylvania State University, 212 Earth & Engrg. Sci. Bldg., Univ. Park, PA 16802 USA; ²NASA Glenn Research Center, 21000 Brookpark Rd., Cleveland, OH 44135 USA

11:20 AM Student

FF9, Spin Dependent Recombination Observation of Hyperfine and Superhyperfine Interactions of Interface Trap Defects at the 6H Silicon Carbide/Silicon Dioxide Boundary: *D. J. Meyer*¹; P. M. Lenahan¹; A. J. Lelis²; ¹Pennsylvania State University, Engrg. Sci. & Mech., 212 EES Bldg., Univ. Park, PA 16802 USA; ²US Army Research Laboratory, Sensors & Electron Devices Direct., 2800 Powder Mill Rd., Adelphi, MD 20783 USA

11:40 AM Student

FF10, Comparison of 4H-SiC PiN Diodes Fabricated with Different Starting Substrates: *P. A. Lossee*¹; C. Li¹; J. Seiler¹; R. E. Stahlbush²; T. P. Chow¹; I. B. Bhat¹; R. J. Gutmann¹; ¹Rensselaer Polytechnic Institute, Ctr. for Integrated Elect., 110 8th St., Troy, NY 12108 USA; ²Naval Research Laboratory, Elect. Sci. & Tech. Div., Washington, DC 20375 USA

Session GG: Semiconductors: Processing and Oxidation

Friday AM

June 25, 2004

Room: 136

Location: DeBartolo Hall

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

8:20 AM

GG1, Electrical and Optical Properties of Anodic LaAl: *Tito Busani*¹; Roderick Devine²; ¹Universite' J. Fourier, CNRS-LEMED, 25, Ave. des Martyrs, Grenoble 38042 France; ²Kirtland Air Force Base, AFRL-VSSE, Albuquerque, NM 87117 USA

8:40 AM

GG2, Improvement in the Insulating Properties of Thermal Oxide on InAlP: M. Graham¹; S. Moisa¹; G. I. Sproule¹; X. Wu¹; J. W. Fraser¹; P. J. Barrios¹; *Anthony John SpringThorpe*¹; D. Landheer¹; ¹National Research Council of Canada, Inst. for Microstruct. Scis., Bldg. M50, Rm. #160, Ottawa, Ontario K1A 0R6 Canada

9:00 AM Student

GG3, Electrical Properties and Microstructure of InAlP Native Oxides for MOS Applications: *Ying Cao*¹; Jing Zhang¹; Xiang Li¹; Thomas H. Kosel¹; Patrick Fay¹; Douglas C. Hall¹; R. E. Cook²; Xuebing Zhang³; Russell D. Dupuis³; ¹University of Notre Dame, Dept. of Elect. Engrg., 275 Fitzpatrick Hall, Notre Dame, IN 46556 USA; ²Argonne National Laboratory, Electron Microscopy Ctr., Argonne, IL 60439 USA; ³Georgia Institute of Technology, Dept. of Elect. & Computer Engrg., Atlanta, GA 30332 USA

9:20 AM Student

GG4, InAlP Native Oxide/GaAs MOS Heterostructure Interface State Density Measured by Impedance Spectroscopy: *Xiang Li*¹; Y. Cao¹; D. C. Hall¹; P. Fay¹; X. Zhang²; R. D. Dupuis³; ¹University of Notre Dame, Dept. of Elect. Engrg., 275 Fitzpatrick Hall, Notre Dame, IN 46556 USA; ²Georgia Institute of Technology, Sch. of Elect. & Computer Engrg., Atlanta, GA 30332 USA

9:40 AM Student

GG5, Lateral Wet Oxidation of AlAsSb Lattice Matched to GaSb: *Kevin Meneou*¹; Hung-Cheng Lin¹; Keh-Yung Cheng¹; Kuang-Chien Hsieh¹; Jongjin George Kim²; Ramon Martinelli²; ¹University of Illinois, Dept. of Elect. & Computer Engrg., Micro & Nanotech. Lab., 208 N. Wright St., Urbana, IL 61801 USA; ²Sarnoff Corporation, CN5300, Princeton, NJ 08543-5300 USA

10:00 AM Break

10:20 AM Student

GG6, Characterization of Sulfur Passivated Group III Antimonide Semiconductors: *Joshua A. Robinson*¹; Sammy H. Wang¹; Suzanne E. Mohnery¹; ¹Pennsylvania State University, Matls. Sci. & Engrg., Univ. Park, PA 16802 USA

10:40 AM Student

GG7, Modifications of GaSb Surface Electronic Structure by the Chalcogen Atoms: S, Se and Te: *Zhiyan Liu*¹; Amit Gokhale¹; Manos Mavrikakis¹; Thomas F. Kuech¹; ¹University of Wisconsin, Dept. of Chem. & Bio. Engrg., 1415 Engrg. Dr., Madison, WI 53706 USA

11:00 AM Student

GG8, Sputtered Titanium Oxide Barrier Layers for PZT MEMS: *Steven Joseph Gross*¹; Raviprakash Jayaraman¹; Srinivas Tadigadapa¹; Susan Trolrier-McKinstry¹; Thomas Jackson¹; ¹Pennsylvania State University, 121 EE East, Univ. Park, PA 16802 USA

11:20 AM

GG9, Novel Selective Dry Etch Process for Ultra Thin Pt Salicide Formation: *Jihun Oh*¹; Jong-Heon Yang¹; Chang-Geun Ahn¹; Kiju Im¹; In-Bok Baek¹; Won-ju Cho¹; Seongjae Lee¹; ¹ETRI, Future Tech. Rsch. Div., 161 Gajeong-dong, Yuseong, Daejeon 305-350 Korea

Session HH: Molecular Electronics II

Friday AM Room: 138
June 25, 2004 Location: DeBartolo Hall

Session Chairs: Avik Ghosh, Purdue University, W. Lafayette, IN 47907 USA; Theresa Mayer, Pennsylvania State University, University Park, PA 16802-2705 USA

8:20 AM Student

HH1, Measuring Conduction Through Molecules Using Step Junction: *Jaewon Choi*¹; *Kangho Lee*¹; Sugata Bhattacharya¹; Saurabh Lodha¹; David B. Janes¹; ¹Purdue University, Sch. of Elect. & Computer Engrg., 465 Northwestern Ave., W. Lafayette, IN 47906-2035 USA

8:40 AM

HH2, Experimental Current-Voltage Characteristics of DNA and Modified DNA Molecules: *V. Soghomonian*¹; J. J. Heremans¹; Hong Chen¹; B. Hartzell¹; ¹Ohio University, Depts. of Physics & Astron., Chmst. & Biochmst., & Nanoscale & Quantum Phenomena Inst., Clipping Labs., Athens, OH 45701 USA

9:00 AM Student

HH3, Binary Molecular Materials for Storage, Transport, and Processing of Digital Information: *Yuhui Lu*¹; Craig S. Lent¹; ¹University of Notre Dame, Elect. Engrg. Dept., Notre Dame, IN 46556-5637 USA

9:20 AM Student

HH4, Self-Assembled Monolayer Resist for Electron/Neutral Atom Beam Lithography: *Siyuranga O. Koswatta*¹; David B. Janes¹; Arthur K. Mills¹; Daniel S. Elliott¹; ¹Purdue University, Dept. of Elect. & Computer Engrg., Box EE344, W. Lafayette, IN 47906 USA

Session II: Characterization of Nitride Semiconductors

Friday AM Room: 155
June 25, 2004 Location: DeBartolo Hall

Session Chairs: Christian Wetzel, Uniroyal Optoelectronics, Tampa, FL 33619 USA; Len Brillson, Ohio State University, Columbus, OH 43210-1272 USA

8:20 AM Student

III, Demonstration of Non-Degenerate Electron Conduction in InN Grown by Molecular Beam Epitaxy: *Craig Hartley Swartz*¹; Randy P. Tomkins¹; Thomas H. Myers¹; David C. Look²; John R. Sizelove³; Hai Lu⁴; William J. Schaff⁵; ¹West Virginia University, Dept. of Physics, Hodges Hall, Morgantown, WV 26506 USA; ²Wright State University, Semiconductor Rsch. Ctr., 3640 Col. Glenn Hwy., Dayton, OH 45435 USA; ³Air Force Research Laboratory, Matls. & Mfg. Direct., Wright-Patterson AFB, Dayton, OH 45433 USA; ⁴Cornell University, Dept. of Elect. & Computer Engrg., Ithaca, NY 14853 USA

8:40 AM

II2, A Study of the Interfaces of GaN and AlN Nucleation Layers During GaN Growth on 4H- and 6H- SiC(0001): *Tong-Ho Kim*¹; Changhyun Yi²; Soojeong Choi¹; Mike Morse¹; Pae Wu¹; April Brown¹; Maria Losurdo³; G. Bruno³; ¹Duke University, Elect. & Computer Engrg., 111 Hudson Hall, Durham, NC 27709 USA; ²Georgia Institute of Technology, Sch. of Elect. & Computer Engrg., 791 Atlantic Dr., Atlanta, GA 30332 USA; ³IMIP-CNR, Inst. of Inorganic Methodologies & of Plasmas, via Orabona, 4-70126, Bari Italy

9:00 AM Student

II3, Capacitance-Voltage and Scanning Probe Studies of InGaN/GaN Quantum-Well Structures: *X. Zhou*¹; E. T. Yu¹; D. I. Florescu²; J. C. Ramer²; D. S. Lee²; E. A. Armour²; ¹University of California, Dept. of Elect. & Computer Engrg. & Matls. Sci. Prog., San Diego, CA USA; ²Veeco TurboDisc Operations, Somerset, NJ 08873 USA

9:20 AM

II4, Quantitative Stress Characterization in GaN Films Grown on Patterned Si(111) by Micro-Raman Spectroscopy: *D. Wang*¹; Y. Dikme²; J. Shuo¹; P. van Gemmer²; Y. C. Lin²; K. J. Chen¹; K. M. Lau¹; M. Heuken³; ¹Hong Kong University of Science and Technology, Dept. of Elect. & Elect. Engrg., Clear Water Bay, Kowloon, Hong Kong; ²RWTH Aachen, Inst. fuer Theoretische Elektrotechnik, Kopernikusstrasse 16, Aachen Germany; ³RWTH Aachen and AIXTRON AG, Inst. für Halbleitertechnik, Templergraben 55, Kackertstr. 15-17, Aachen D-52074 Germany

9:40 AM Student

II5, Transmission Electron Microscopy and Photoluminescence Study of GaN Epilayers Grown by MOCVD: *Xiaolong Fang*¹; Subhash Mahajan¹; ¹Arizona State University, Chem. & Matls. Engrg., Tempe, AZ 85287 USA

10:00 AM Break

10:20 AM Student

II6, Intra d-Shell Photoluminescence Transitions of Mn²⁺ Ions in GaN:Mn Codoped with Mg Acceptors: *Bing Han*¹; Melville P. Ulmer²; Bruce W. Wessels¹; ¹Northwestern University, Dept. of Matls. Sci. & Engrg. & Matls. Rsch. Ctr., Evanston, IL 60208 USA; ²Northwestern University, Dept. of Physics & Astron., Evanston, IL 60208 USA

10:40 AM Student

II7, The N-Face GaN Etch Property by Photo-Electro-Chemical (PEC) Wet Etching and its Application for High Efficiency GaN LEDs: *Yan Gao*¹; Tetsuo Fujii²; Rajat Sharma¹; Kenji Fujito²; Mike Craven¹; James Speck¹; Steve DenBaars¹; Shuji Nakamura¹; Evelyn Hu¹; ¹University of California, Matls. Dept., Santa Barbara, CA 93106 USA; ²University of California, NICP/ERATO JST, Santa Barbara, CA USA

11:00 AM Student

II8, Optical Modes in Mushroom-Shaped GaN/InGaN Micro-disk Resonators Fabricated Using Photoelectrochemical Etching: *Elaine D. Haberer*¹; Rajat Sharma¹; Cedrik Meier¹; Andreas R. Stonas²; Steve P. DenBaars¹; Shuji Nakamura¹; Evelyn L. Hu²; ¹University of California, Matls. Dept., Santa Barbara, CA 93106 USA; ²University of California, Elect. & Computer Engrg. Dept., Santa Barbara, CA 93106 USA

Session JJ:
**Contacts to Nanotubes, Nanowires
and Organic Films**

Friday AM

June 25, 2004

Room: 101

Location: DeBartolo Hall

Session Chairs: Suzanne Mohny, Pennsylvania State University, Dept. of MSE, University Park, PA 16802 USA; Lisa Porter, Carnegie Mellon University, Dept. of MSE, Pittsburgh, PA 15213-3890 USA

8:20 AM Invited

JJ1, Contacts to Carbon Nanotubes for Electronic and Spin-Electronic Devices: *Bruce William Alphenaar*¹; ¹University of Louisville, Elect. & Computer Engrg., Lutz Hall Rm. 409, Louisville, KY 40292 USA

9:00 AM

JJ2, Measuring the Specific Contact Resistance of Contacts to Semiconductor Nanowires: *Suzanne E. Mohny*¹; Marco Cabassi²; Soham Dey¹; Yanfeng Wang²; K. K. Lew¹; Joan M. Redwing¹; Theresa S. Mayer²; ¹Pennsylvania State University, Dept. of Matls. Sci. & Engrg. & Matls. Rsch. Inst., Steidle Bldg., Univ. Park, PA 16802 USA; ²Pennsylvania State University, Dept. of Elect. Engrg., Univ. Park, PA 16802 USA

9:20 AM Student

JJ3, Contact Resistance in Nanowire Characterization: *Ryan A. Munden*¹; Ilona Kretzschmar¹; Eric Stern¹; Aric Sanders¹; Mark A. Reed¹; ¹Yale University, Dept. Elect. Engrg. & Applied Physics, 15 Prospect St., Rm. 509, New Haven, CT 06511 USA

9:40 AM Student

JJ4, Studies on Metal Contacts to InP Nanowires: Jenny Hu¹; David Aplin¹; Clint Novotny¹; Paul K.L. Yu¹; Edward T. Yu¹; Deli Wang¹; S. S. Law¹; ¹UCSD, ECE Dept., 9500 Gilman Dr., La Jolla, CA 92093 USA

10:00 AM Break

10:20 AM Invited

JJ5, Making Electrical Contacts to Organic Materials by Soft Lithography: *Julia W.P. Hsu*¹; Tae-Woo Lee²; Jana Zaumseil³; Yueh-Lin Loo⁴; Zhenan Bao⁵; John A. Rogers⁶; ¹Sandia National Laboratories, PO Box 5800, MS 1415, Albuquerque, NM 87185 USA; ²Samsung Advanced Institute of Technology, Elect. Matls. Lab., Mt. 14-1, Nongseo-Ri, Giheung-Eup, Yongin-Si, Gyeonggi-Do 449-712 Korea; ³Cambridge University UK; ⁴University of Texas, Dept. of Chem. Engrg., Austin, TX 78712 USA; ⁵Stanford University, Dept. of Chem. Engrg., Stanford, CA 94305 USA; ⁶University of Illinois, Urbana, IL USA

11:00 AM

JJ6, Current Injection Mechanism in Metal/Molecular-Organic-Semiconductor/Metal Structures: Ruchi Agrawal¹; Ajit Kumar Mahapatro¹; *Subhasis Ghosh*¹; ¹Jawaharlal Nehru University, Sch. of Physical Scis., New Mehrauli Rd., New Delhi, Delhi 110067 India

ADVANCE REGISTRATION FORM

46th TMS Electronic Materials Conference (EMC)
June 23-25, 2004 • University of Notre Dame, Notre Dame, Indiana

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, 2004

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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 13, 2004. A non-refundable deposit of \$275 is required to secure each space reserved and must be paid at the date of application. Application for space rental indicates the applicant's willingness to abide by all exhibit terms and conditions, and general regulations.

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