

Seventeenth Biennial IEEE/Cornell University Conference on Advanced Concepts in High Performance Devices

August 7-9 (Monday-Wednesday noon), 2000

Sponsored by: The Electron Device Society (EDS) of IEEE
In cooperation with: The Microwave Theory and Techniques Society of IEEE

IEEE web site <http://www.iiv.cornell.edu/cc00/>

Registration

There will be a reception on Sunday, August 6, 2000 from 4-6 PM in the Phillips Hall Lounge, 2nd floor. Registration materials will be available at the reception for those arriving on Sunday.

On Monday, August 7, registration will take place in 101 Phillips Hall on the Engineering Quad 7:30 a.m. — 12 noon . Those that have opted for on-campus housing can check in at the Conference Services desk located in 206 Robert Purcell Community Center. This desk is open daily 8:00 a.m. — 10:00 p.m. The registration fee includes conference proceedings, refreshment breaks and the barbeque on Tuesday, August 8, 6-8 PM.

Campus Parking

Each attendee with a car must purchase a transportation permit at the cost of \$5.00. This allows participants use of a parking permit for the CC lot that is located on North Campus. It also allows people to use the campus shuttle. The CC lot is located directly across the street from the Townhouse apartments. For those participants staying at the University Best Western, you may purchase a transportation permit at registration or you can use the hotel shuttle to and from campus. There is no parking near Phillips Hall where the meetings will take place.

Accommodations

There are 29 Townhouse apartments available and will be assigned on a first come, first served basis (see the conference registration form for rates (IEEE web site <http://www.iiv.cornell.edu/cc00/>). Rooms have been reserved at the University Best Western to ensure sufficient housing for meeting attendees. Please specify that you are attending the 2000/IEEE Cornell Conference when you are making your reservations. These rooms will be held until July 17, 2000. All conferees must make their own room arrangements.

University Best Western - (607) 272-6100 - Deadline: July 17, 2000

Please refer to the conference registration form for the hotel rates.

(See the **IEEE web site** <http://www.iiv.cornell.edu/cc00/>).

Barbeque — Tuesday, August 8, 6–8 PM

The registration fee includes a ticket to the conference BBQ, which will be held at Taughannock Falls State Park, Central Pavilion, on Tuesday 6-8 PM, August 8. Bus transportation from the Cornell Campus and the University Best Western will be provided.

Confirmation

When we receive your completed registration form and full payment for the conference, we will send you a confirmation letter and will include more detailed driving directions and a Cornell University campus map.

Transportation

Ithaca is served by US Air, whose terminal is located about three miles from the Cornell University Campus. You may either rent a vehicle at the airport terminal or simply take the airport shuttle to campus. Several state highways lead to the city and Ithaca is within fifty miles of the New York State Thruway.

Recreation

Ithaca is a major education community with a population of approximately 30,000 citizens. It lies at the southern tip of Cayuga Lake in the Finger Lakes Region of upstate New York. The lake, forty miles long and three miles across at its widest point, is ideal for all kinds of water sports, including swimming, boating, water skiing and fishing. Three beautiful state parks are only a few minutes drive from the city: Buttermilk Falls; Robert H. Treman; and Taughannock Falls, which contains the highest waterfall east of the Rocky Mountains. Within an hour's drive of Cornell are the wineries at Hammondsport, the cascades at Watkins Glen, and the Corning Glass Center.

Monday, August 7, 2000 – Morning

Plenary Session

Chairs: C. Clarke (Northrop Gruman)
L. Lunardi (JDS-Uniphase)

All Invited Speakers

- 8:40 – 8:45 AM C. Clarke – **Welcome**
L. Lunardi – Conference Notes
- 8:55 – 9:30 C. Nguyen (HRL), “GaAs, InP and GaN Power Devices and Amplifiers: Status and Outlook” (email: cnnguyen@hrl.com)
- 9:30 – 10:05 L. Lin (Tellium), “MEMS Networking Photons – Lilliputian Technologies Advance Global Optical Networks,” (email: lylin@tellium.com)

10:05 – 10:25 BREAK

- 10:25 – 10:50 M. Holcomb (LumiLeds Lighting): “The LED Revolution” (email: mari_holcomb@lumiled.com)
- 10:50 – 11:25 E. Martinez (DARPA) “Future Directions for Novel Devices,” (email: emartinez@darpa.mil)
- 11:25 – 12:00 H. Craighead (Cornell) “Biological Uses of Nano Structures” (e-mail: HGCI@cornell.edu)
- 12 – 1:30 LUNCH (on your own)**

Monday Afternoon: August 7, 2000: Non-Unipolar Devices

Chairs: M. Sokolich (HRL)
A. Brown (Georgia Tech)

- 1:30 – 1:50 S. Krishnan (UCSB), “Broadband HBT Amplifiers” (email: pks@vsat.ece.ucsb.edu)
- 1:50 – 2:10 J. Zhang (Delft University), “High-Efficiency SiGe Microwave Power HBTs” (email: zhang@dimes.tudelft.nl)

- 2:10 – 2:30 M.W. Dvorak (Simon Fraser Univ), “ High Performance InP/GaAsSb/InP DHBT with heavily doped base layers,” (email: colombo@ieee.org)
- 2:30 – 2:50 P. Parik (Nitres), “Regrown Emitter AlGaIn-GaN PnP HBTs,” (email: umesh@ece.ucsb.edu)
- 2:50 – 3:05 BREAK**
- 3:05 – 3:25 P. Debray (SPEC, France), “ A novel Nanometer Ballistic Quantum Device for Potential Use in Analog-to-digital Conversion,” (email: debray@drecam.saclay.cea.fr)
- 3:25 – 3:45 J. W. Graff (Boston Univ), “Reduction of Base Resistance in GaN-based HBTs,” (email: jgraff@bu.edu)
- 3:45 – 4:05 R.J. Welty (UCSD), “ Nitrogen Incorporation in GaInP for Novel HBTs,” (email: rwelty@ece.ucsd.edu)
- 4:05 – 4:25 J.N. Schulman (HRL) "Heterostructure Millimeter Wave Zero Bias Diodes," email: (schulman@hrl.com)

LATE NEWS

4:25 – 4:35

C.-H. Lin (U Michigan) ,”Fabrication and Characterization of RTD-HBT Inverter,” (email: chenghui@engin.umich.edu)

Monday (4:30- 6:30 pm) August 7, 2000

Poster Session

Chairs: L. Rea (WPAFB)
F. Schubert(Boston Univ)

A. Davidson (Northrop Grumman), “ Using SOI at a quarter volt high-speed low power CMOS,” (email: Arthur_davidson@mail.northgrum.com)

F. Schuermeyer (AFRL), “ Thermal Studies on HBTs using Electroluminescence,” (email: fritz.schuermeyer@wpafb.af.mil)

T. Wuchenauer (Ulm Univ),” Comparison of Different Doping Profiles in Schottky Diodes for NLTLs,” (email: mbirk@research.att.com)

X. Bai (Ohio University), "Characterization of ScN heterojunctions”, (email: xuwen@helios.phy.ohiou.edu)

M. Trivedi (U Illinois, Chicago), “ High-speed Switching Performance and Buch converter Operation of 4H-SiC Diodes,” (email: shenai@eecs.uiuc.edu)

S. Lee (Purdue), “High-Efficiency, high linearity GaN dual gate non-uniform distributed amplifier,” (email: sungjae@ecn.purdue.edu)

E. Alekseev (U Michigan), “ Current-injection Characterization of Breakdown Voltage in GaN MODFETs, (email: pavlidis@umich.edu)

J. Champlain (UCSB), “ High-speed HBTs with Oxide Apertures,” (email: jgchamp@indy.ece.ucsb.edu)

C. Zheng (UCSB), “ AlGaAs/GaAs/InGaAs pHEMT on Oxide,” (email: mishra@ece.ucsb.edu)

J. Hernando (ETSI, Spain), “High Indium Content InGaAs/GaAs QW Infrared Detectors”, (email: hernando@die.upm.es)

A. Kader (RPI), “Application of Heterodimensional Transistors for Weighted Sum Threshold Operation,” (email: mshur@rpi.edu)

A. Kuliev "A Study of On-State and Off-State breakdown Voltage in GaN MESFETs," University of Illinois, (email: almaz@capone.ccsm.uiuc.edu)

E. Chigaeva (U Stuttgart, Germany), “Determination of Small-signal Parameters of GaN-based HEMTs,” (email: kohn@ebs.e-technik.uni-ulm.de)

Late News:

S. Wu (U. Connecticut, Storrs), “A Modified Drift-Diffusion Model for Submicron Devices,” (Phone: (860)486-3410)

M. Yoganathan (Litton Airtron), “ Growth and Characterization of Large Semi-Insulating 6H Silicon Carbide Substrates,” (email: flong@littonairtron.com)

S. Wu (U. Connecticut, Storrs), “A Theoretical Determination of Impact Ionization Induced Gate Current in InP HEMTs,” (Phone: (860)486-3410)

Tuesday Morning August 8, 2000 - SiC based devices and processing

Chairs: M. Spencer (Cornell Univ)
E. Kohn (Ulm Univ, Germany)

- 9 – 9:30 AM **Invited Talk** C. Harris (ACREO), “Realizing the Potential of SiC for High Frequency, High Power Devices,” (email: chris@imc.kth.se)
- 9:30 – 9:50 C. Clarke (Northrop Gruman), “A 16 W, 40% efficient, continuous wave, 4H SiC L-band SIT,” (email: r_chris_clarke@md.northgrum.com)
- 9:50 – 10:10 I. Perez (U Colorado), “Fabrication and characterization of 4H-SiC MOS with atomic layer deposited (ALD) SiO₂,” (email: Ivan.Perez@colorado.edu)
- 10:10 – 10:30 BREAK**
- 10:30 – 10:50 E. A. McShane (U Illinois, Chicago), “Microwave Performance of Power MOSFETs on SOI substrates,” (email: shenai@eecs.uic.edu)
- 10:50 – 11:10 L. Yuan (Purdue U), “Silicon Carbide IMPATT Oscillators for High Power Microwave Generation,” (email: webb@ecn.purdue.edu)
- 11:10 – 11:30 A. Osinsky (NZ Technologies), “New Concepts and Preliminary Experimental Results for SiC Bipolar Transistors: ZnSiN and ZnGeN-based heterojunction emitters,” (email: andrei@nzat2.tiac.net)
- 11:30 – 11:50 R. Sadler (CREE), “SiC MESFET Hybrid Amplifier with 30W Output Power at 10 GHz”, (email: robert_sadler@cree.com)
- LATE NEWS**
11:50 – 12:00 Y.. Tang (RPI), “High Temperature Characterization of Implanted-emitter SiC BJT”, (email: tangy@rpi.edu)
- 12 – 1:30 LUNCH (on your own)**

Tuesday Afternoon, August 8, 2000: Wide band gap materials and Processing

- 9:30 – 9:50 B. Green (Cornell), “Large Signal Modeling of AlGaN/GaN HEMTs for IC applications,” (email: bmg6@cornell.edu)
- 9:50 – 10:10 L. Eastman (Cornell), “Power Limits of Polarization Induced AlGaN/GaN HEMTs,”(email: lfe@iiiv.tn.cornell.edu)
- 10:10 – 10:25 BREAK**
- 10:25 – 10:45 A. Vescan (Daimler-Chrysler), “Performance and Limitations of AlGaN/GaN MODFETs,” (email: andrei.vescan@daimlerchrysler.com)
- 10:45 – 11:10 S.L. Rummyantsev (RPI), “Low Frequency Noise in GaN based transistors,” ([email: roumis2@rpi.edu](mailto:roumis2@rpi.edu))
- 11:10 – 11:30 O. Breitschaedel (Stuttgart), “Short Channel Effects in GaN based high power transistors,” (email: breitschaedel@physik.uni-stuttgart.de)
- 11:30 – 11:50 A. Aleksov (Ulm), “Diamond Power FET Concept,” (email: kohn@ebs.e-technik.uni-ulm.de)
- 11:50– 12:10 W. Lu (U Illinois, Urbana), “Microwave Noise Performance of AlGaN/GaN HFETs on Sapphire substrates,” (email: adesida@capone.ccsm.uiuc.edu)