Connecticut Symposium on Microelectronics & Optoelectronics
TWENTY NINTH ANNUAL SYMPOSIUM: VIRTUAL
Nanotechnology in Electronics, Photonics, Biosensors, and Energy Systems.

University of Connecticut
Storrs, CT 06269

October 2, 2020

Sponsored by The Connecticut Microelectronics & Optoelectronics Consortium (CMOC), SPIE-UConn Chapter, the University of Connecticut’s Center for Continuing Studies, and the Yale Center for Microelectronic Materials and Structures.

Invited Keynote Talks
- Dr. J. Chow, Quantum Computing, IBM Thomas J. Watson, Research Center
- Dr. E. Fossum, Quanta Image Sensor, Dartmouth College
- Dr. H. Lee. Electronic and IR Sensing in Forensics, U. New Haven
- Invited Technical Presentations from industrial and academic experts.


Discover R&D resources in Connecticut and neighboring states.

Network with internationally renowned experts and learn about the R & D activities in micro- and nano-technologies applied to electronics, photonics, biosensors and energy applications.

CMOC Home Page: http://www.ee.uconn.edu/cmoc
Webex Event link (page 3)

The principal purpose of the 29th Connecticut Symposium on Microelectronics and Optoelectronics is to strengthen cooperation and sharing of resources between Connecticut industries and universities in the areas of microelectronics, optoelectronics, biosensors, energy and emerging technologies.

Another goal is to expose Connecticut industries to new technologies, trends, and current issues through invited presentations by nationally and internationally recognized experts.

The symposium will act as a forum to disseminate information to state government leaders and the public at large about current directions and developments in these key areas.

Finally, the symposium will seek to identify resources that encourage co-operative entrepreneurship among Connecticut industries and universities in the areas of microelectronics and opto-electronics.
SESSION I: Materials 10:00-10:30am

Session Chairs: Maria Gherasimova, John Ayers

- John E. Ayers, Tedi Kujofsa, Johanna Raphael, and Md T. Islam, Recent Advances in the Modeling of Strain Relaxation and Dislocation Dynamics in InGaAs/GaAs, IECCE, UConn, U. Hartford, CT.

SESSION II: Devices 10:30-11:00am

Session Chairs: John Ayers, Maria Gherasimova

- Fengnian Xia, Transport in two-dimensional semiconductors, Yale University.
- Manuf Bhuian, Gate-All-Around Nanosheet Transistor for Logic Technology, IBM T.J. Watson Research Center, NY.

POSTER SESSION:
Poster papers PowerPoint slides will be posted.
 Twenty-Nine Poster Papers (see page 4).

SESSION III: Applications (12:30-1:00pm)

Session Chairs: Clement Valerio, Fengnian Xia

- Manos Tentzeris, Flexible Electronics-Additive Manufacturing, Georgia Tech.
- Dilnuba Parvin, T. Oh and S. Islam, Design of a Smart Maximum Power Point Tracker (MPPT) for RF Energy Harvester, University of Missouri.

SESSION IV: Biosensing/Nano-Biosystems

Session Chairs: Binlin Wu, Todd Schwendemann

- Bo Zhang and P-X. Gao, Single Nanourinary Sensor for Multi-Analyte Detection, UConn.
- Nicholas Nolta, P. Ghelich, and M. Han, Fabrication of Recessed Traces for Improved Longevity of Implantable MEMS, UConn.

SESSION V: Emerging Technologies Energy/AI/Robotics (2:30-3:00pm)

Session Chairs: Jeffrey Orszak, Clement Valerio

- Tushar Shimp and W. Sampath, CdTe Thin Film Solar Cells, Colorado State University, Fort Collins, CO.
- Lei Wang and J. Chandy, Anti Reverse Engineering using Transient Electronics, UCONN.
- Venk. Mutalik, Fiber Optical Communications (TBC), Comcast, CT.

Poster Paper Viewing (3:00-3:30pm)
Poster Reviewers; A. Fish, C. Valerio, T. Schwendemann D. Ahlgren, M. Gherasimova

Best Poster Paper Award Announcement
REGISTRATION INFORMATION  Prof. M. Gherasimova

Fees: The registration is free for authors, undergraduate and graduate students, and members.

Symposium Location: Webex Event

Local Arrangements: NA

Symposium Parking: NA

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Registration is free for graduate and undergraduate students, authors and attendees.

Event address for attendees: https://uconn-cmr.webex.com/uconn-cmr/onstage/g.php?MTID=ef16af7fd54cdc6b273142ab98d025367

Event address for panelists/paper authors: https://uconn-cmr.webex.com/uconn-cmr/onstage/g.php?MTID=ecfb86916552f76a7ffda5a15c440f
PAPERS FOR POSTER PRESENTATIONS

P1. Johanna Raphael, Tedi Kujofsa, J. E. Ayers, Comparison of Buffer Layer Grading Approaches in InGaAs/GaAs (001), UCONN.
P2. Tedi Kujofsa, J. E. Ayers, A Modeling Study of Dislocation Sidewall Gettering in II-VI and III-V Semiconductor Heterostructures, UCONN.
P3. Tedi Kujofsa, J. E. Ayers, A Jogging and Weaving Model for Dislocation Interactions in Heterostructures Containing Strain Reversals, UCONN.
P4. Eric Wang and Binlin Wu, Human gliomadiagnosis and grading based on analysis of resonance Raman spectra using artificial intelligence, SCSU, Amity HS.
P5. Raja Hari Gudlavalleti, Roman Mays, Evan Heller, Faquir Jain, High Mobility Transport in Ge Quantum Dot Nanocrystalline Channel for a-Si Thin Film Transistors, UCONN.
P6. Chengwu Zhang, Jie Qi, Tuo Gao, Brian Willis, Laser Assisted Area Selective Atomic Layer Deposition on Plasmonic Nanostructures, UCONN.
P7. Lauren Bledsoe, Dominick Hollister, Truc Min Nguyen, Matthew Sodorski, Bilal Khan, Roman Mays, Raja Hari Gudlavalleti, Evan Heller, Faquir Jain, Quantum Dot Gate (QDG) SRAMs: Fabrication and Modeling, UCONN.
P8. S. Singh, S. Riccardi, X. Lu, M. Platt, X. Wen, R. Gudlavalleti, R. Mays, B. Khan, and F. Jain, Modeling of Ligh Activated SCRs, UCONN.
P9. Thomas Link, S M Rakhiul Islam, Sung-Yeul Park, Impedance Spectroscopy of Photovoltaic Module, UCONN. (Withdrawn)
P10. Roman Mays, Raja Hari Gudlavalleti, Bilal Khan, Evan Heller, Faquir Jain, Electroluminescence in cladded Ge quantum dot structures, UCONN.
P11. J. Grasso, B. Willis, Study of Crystallinity of Yttrium Oxide Thin Films Grown by Plasma Enhanced Atomic Layer Deposition (PEALD), UCONN.
P12. Raina Sayeed Khan, Nam H. K'an', Jake Scoggin, Helena Silva and Ali Gokirmak, Multi-contact Phase Change Toggle Logic Device Utilizing Thermal Crosstalk, UCONN.
P15. Nathaniel Keri, Ian Sands, Libo Zhou, Yupeng Chen, and Martin Han, Electrochemical characterization of nanotube coatings on silicon-based microelectrodes, UCONN.
P16. Pejman Ghelich, Nicholas F. Nolta, and Martin Han, Sputtered Iridium Oxide Film (SIROF) Characterization on Implantable Neural Microelectrodes, UCONN.
P17. Susrutha Babu Sukhavasi, Khaled Elleithy, Abdelshakour Abuzneid, Suparshya Babu Sukhavasi, Analysis of CMOS Image Sensors with High Dynamic Range, UB.
P19. Alpaslan Ersöz, Insoon Kim, and Martin Han, A Portable and Multifunctional 16-Channel Neurostimulator System, UCONN.
P20. Saidjafarzod Ilhom, Adnan Mohammad, Deepa Shukla, John Grasso, Brian Willis, Necmi Biyikli, Studying the role of N2/H2 radicals in the plasma-induced microstructural transformation of ALD-grown InN films, UCONN.
P21. Saidjafarzod Ilhom, Adnan Mohammad, Deepa Shukla, John Grasso, Brian Willis, Necmi Biyikli, Towards as-grown crystalline β-Ga2O3 films at sub-200 °C via plasma-enhanced atomic layer deposition, UCONN.
P22. A. Mohammad, Krishna D Joshi, S. Ilhoma, D. Shukla, J. Grasso, B. Willis, Barrett Wells, A. K. Okyay and N. Biyikli, Low-temperature atomic layer deposition of Boron Nitride via hollow-cathode nitrogen plasmas: In-situ process monitoring and post-deposition annealing, UCONN.
P23. Adnan Mohammad, Krishna D Joshi, Deepa Shukla, Saidjafarzoda Ilhom, Brian Willis, Barrett Wells, Necmi Biyikli, Plasma-enhanced atomic layer deposition of vanadium oxide using TEMA-V and oxygen plasma and post-deposition annealing, UCONN.
P24. Deepa Shukla and Necmi Biyikli, Low temperature growth of crystalline GaN film using hollow-cathode plasma-assisted atomic layer deposition for flexible devices, UCONN.
P25. Steven Ang, Saeed Mikki and Saion Sinha, Machine Learning Application on a Point of Care Diagnostic System, UNH.
P26. Kiruthiga Ramakrishnan, Chengde Cui, Ewa Kirkor, Saion Sinha, OPTIMAL POC BIO-NANOSENSOR TO DETECT THE PRESENCE OF PATHOGENS IN PLANT, UNH.
P27. N. R. Butterfield, R. Mays, B. Khan, R. Gudlavalleti, F.C Jain, Quantum Dot Gate (QDG) Quantum Dot Channel (QDC) Multistate Logic Non-Volatile Memory (NVM) with High-K Dielectric HfO2 Barriers, UCONN.
P29. Kenneth Jimenez and Binlin Wu, Distinguish human breast cancer cells with different metastatic abilities using resonance Raman spectroscopy and machine learning, SCSU.