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Newsletter of Baltimore, Northern Virginia, and Washington Sections

Happy June!

Today in Technology History: It was on June 1, 1944 that the Colossus Mark II computer became operational at Bletchley Park, only five days ahead of the Normandy Invasion in the Second World War. The Colossus computers were instrumental in helping decode German military communications, saving countless lives. These computers were electronic and digital but had to be programmed manually.

Senior Member Elevations: Congratulations to the following members who were recently elevated to the rank of Senior Member. The next meeting of the Senior Membership Review Panel will be in Toronto, Canada on 22 June. All applications need to be completed with references seven days prior. If you need help with references, reply to this email.

Name	SECTION
Bhargava Kumar Chinni	Baltimore Section
Lynette Hornung	Baltimore Section
Reid McCargar	Baltimore Section
Katherine Newell	Baltimore Section
Justin Zobel	Baltimore Section
Shirin Bhambhani	Northern Virginia Section
Geba Chang	Northern Virginia Section
Chris Csefalvay	Northern Virginia Section
Bob Gelety	Northern Virginia Section
Ajit Jain	Northern Virginia Section
Mohamed Kamaludeeen	Northern Virginia Section
Tanvir Kaur	Northern Virginia Section
Narinder Singh Kharbanda	Northern Virginia Section
Abbas Kiani	Northern Virginia Section
Ashwini Kumar	Northern Virginia Section
Arjun Sudhanva Naik	Northern Virginia Section
Srinivas Vaddadi	Northern Virginia Section
Rohith Vallabhaneni	Northern Virginia Section
Daniel Gopman	Washington Section
Sunilkumar Guduru	Washington Section
Chelsea Haughn	Washington Section
Michael Otte	Washington Section
Gerald Prado Perez	Washington Section
Chris Rouff	Washington Section
Pankhuri Sen	Washington Section
Bradley Stubbs	Washington Section

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IEEE 2024 Elections – Part 1
By Marc Apter, Past NOVA Chair, almost 40 years ago

The IEEE 2024 Election voting starts on 15 August 2024, and ends on 1 October 2024. In addition to all of the Offices that will be on your ballot, if you are a Graduate Student Member or higher member, you will have the opportunity to vote for the Region 2 2025-2024 Director-Elect.

What is important about this election, is the Region 2 2025-2026 Director-Elect will serve as the 2027 Director of the current Region 2, as well as the 2028 Director of the new Region 2, that joins the current Region 2 and Region 1 into a single Region.

The two candidates for Region 2 2025-2026 Director Elect on the ballot are Murty Polavarapu and Philip Gonski. The person elected will first be part of the team that will be planning for the shot-gun marriage of the two Regions, and then will lead the Region from today's Region 2 to the new larger Region 2 during the two years of their term.

When you vote, please consider the person elected for this position over the next four years will have to spend more time than any of his predecessors have had to spend holding these same positions, and my wife said I spent too much during my terms as 1999-2001 Region 2 Director-Elect and 2001-2002 Region 2 Director.

When you receive your IEEE-Election Ballot, please vote, we need a large turn-out of voters in this election. Thank you.

Stay tuned for the Part 2 of this article in July Newsletter.

Upcoming IEEE Conferences in our area:

The International Microwave Symposium, which is the flagship conference of Microwave Theory and Technology (MTT) Society will be in Washington **June 16-21** at the Walter E. Washington Convention Center. There are several associated events in connection with the main symposium including a trade show, Boot Camps and Future G Summit. You can register for the events separately and discounts are available for Retirees/Life Members and Students.

If you are interested in organizing a conference in the local area, you can contact Murty Polavarapu at murtyp@ieee.org.

Date/Time	Title	Speaker(s)	Location	Primary Sponsor
Jun 05, 2024 09:00 AM	Compact Modeling of GaN HEMTs for Power and RF Circuit Design	Yogesh Singh Chauhan	Virtual	Electron Devices Society, Solid-State

				Circuits Society Chapter
Jun 06, 2024 06:05 PM	Re-envisioning Direct Heat-to-Electricity Conversion with Additive Manufacturing	Prof. Saniya Leblanc	Virtual	Nanotechnology Council Chapter
Jun 08, 2024 10:00 AM	WASHINGTON SECTION JUNE-2024 ADCOM MEETING		College Park, MD	Washington Section Chapter
Jun 10, 2024 06:30 PM	Baltimore Section Executive Committee (ExCom) Meeting		Virtual	Baltimore Section Chapter
Jun 11, 2024 06:00 PM	IEEE NOVA Section EXCOM June Meeting		Arlington, VA	Northern Virginia Section Chapter

Date: June 5, 2024 (Wednesday)

Topic: Compact Modeling of GaN HEMTs for Power and RF Circuit Design

Speaker: Yogesh Singh Chauhan

Time: 9:00 AM

Place: Virtual

Registration: https://events.vtools.ieee.org/m/420980

Abstract: Compact models are used by circuit designers using SPICE modeling tools to design analog or digital circuits for high-frequency and/or high-power circuits for many different applications. The process of translating the device's performance into an accurate model is an interesting and complex process.

If you are interested in learning more about the ASM-HEMT model for GaN HEMTs from its developer, please consider joining us for this insightful presentation.

Gallium Nitride (GaN) High Electron Mobility Transistors (HEMTs) and their associated RF and power-electronic applications have been a topic of aggressive academic and industrial research over the past couple of decades. This is due to the commendable level of performance promised by the GaN material system and the hetero-junction that it forms with AlGaN, leading to features such as high breakdown voltage, high mobility, high saturation velocity, high sheet carrier density, the ability to withstand high operating temperatures etc. In order to take full advantage of these properties and to translate them into viable circuit applications a fully robust and accurate GaN HEMT model is of

prime importance. In this talk, I will present our ASM-HEMT model for GaN-based power and RF devices. I will also briefly talk about our efforts in modeling of SiC based MOS transistors.

Speaker Bio: Yogesh Singh Chauhan is a professor at Indian Institute of Technology Kanpur, India. He was with ST Microelectronics during 2003-2004; Semiconductor Research & Development Center at IBM Bangalore during 2007 – 2010; Tokyo Institute of Technology in 2010; and University of California Berkeley during 2010-2012. He is the developer of several industry standard models: ASM-HEMT, BSIM-BULK (formerly BSIM6), BSIM-CMG, BSIM-IMG, BSIM4 and BSIM-SOI models. His research group is involved in developing compact models for GaN transistors, FinFET, Nanosheet/Gate-All-Around FETs, FDSOI transistors, Negative Capacitance FETs and 2D FETs. His research interests are RF characterization, modeling, and simulation of semiconductor devices. He is the Fellow of IEEE and Indian National Academy of Engineering. He is the Editor of IEEE Transactions on Electron Devices and Distinguished Lecturer of the IEEE Electron Devices Society. He is the chairperson of IEEE-EDS Compact Modeling Committee and IEEE Uttar Pradesh section. He has published more than 400 papers in international journals and conferences.

Presented by: Electron Devices Society, Solid-State Circuits Society, Electronic Packaging Society Chapter.

Date: June 6, 2024 (Thursday)

Topic: Re-envisioning Direct Heat-to-Electricity Conversion with Additive Manufacturing

Speaker: Prof. Saniya Leblanc

Time: 6:05 PM

Place: Virtual

Registration: https://events.vtools.ieee.org/m/421017

Abstract: Thermoelectric power generators can convert waste heat into useful electrical energy, but traditional thermoelectric device manufacturing uses bulk material processing with machining, assembly, and integration steps which lead to material waste and performance limitations. The traditional manufacturing approach offers virtually no flexibility in designing the architecture of thermoelectric modules, especially at multiple length scales. Additive manufacturing can overcome these challenges. Although printing techniques, including 3D printing, have been explored for thermoelectric devices, these techniques have been limited to organic or organic-inorganic composite materials. Additive manufacturing solutions have not been demonstrated for inorganic thermoelectric materials. This presentation will describe our

progress in laser-based additive manufacturing of thermoelectric materials such as tellurides and silicides. Laser powder bed fusion (also known as selective laser melting) is an additive manufacturing process which locally melts successive layers of material powder to construct three-dimensional objects. When applied to thermoelectric materials, this technique could enable new shapes, hierarchical structuring, material-to-device integration, and large-area processing. The presentation will show the first demonstrations of laser additive manufacturing applied to thermoelectric materials and discuss the link between materials, manufacturing, and system-level considerations for thermoelectric power generators.

Speaker Bio: Saniya LeBlanc is an associate professor in the Department of Mechanical & Aerospace Engineering at the George Washington University. Her research goals are to create next-generation energy solutions leveraging advanced materials and manufacturing techniques. Previously, she was a scientist at a startup company developing energy conversion technologies. Prior to pursuing a PhD, she was a high school teacher through Teach for America. Dr. LeBlanc obtained a PhD and MS in mechanical engineering with a minor in materials science at Stanford University. She was a Churchill Scholar at University of Cambridge where she received an MPhil in engineering, and she has a BS in mechanical engineering with a minor in French from Georgia Institute of Technology. In 2018, the American Society of Engineering Education named Dr. LeBlanc one of its "20 Under 40" high-achieving researchers and educators, and she received the National Science Foundation CAREER award in 2020.

Presented by: Nanotechnology Council Chapter

Date: June 8, 2024 (Saturday)

Topic: WASHINGTON SECTION JUNE-2024 ADCOM MEETING

Time: 10:00 AM

Place: College park Airport Operations Building, 1909 Corporal Frank Scott Dr, College Park, MD (Multi-Purpose Room B)

Registration: https://events.vtools.ieee.org/m/422291

Abstract: Please join us for the monthly administrative meeting of the IEEE Washington Section. All IEEE members in our Section are welcome to attend.

IEEE members who wish to volunteer for the Washington Section Administrative Committee are encouraged to attend.

Presented by: Washington Section

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Date: June 10, 2024 (Monday)

Topic: Baltimore Section Executive Committee (ExCom) Meeting, 10 June, 2024

Time: 6:30 PM

Place: Virtual

Registration: https://events.vtools.ieee.org/m/391986

Abstract: Monthly meeting of the IEEE Baltimore Section's executive committee. The meeting is open to all Section members.

This meeting will be by videoconference only. The meeting link will be sent to registrants.

Presented by: Baltimore Section

Date: June 11, 2024 (Tuesday)

Topic: IEEE NOVA Section EXCOM June Meeting

Time: 6:00 PM

Place: Suite 3, Westover Library, 1644 North McKinley Road, Arlington, VA (Longfellow Room)

Registration: https://events.vtools.ieee.org/m/422196

Abstract: This is the June meeting for the IEEE Northern Virginia Section Executive Committee. All Section members are welcome.

Presented by: Northern Virginia Section