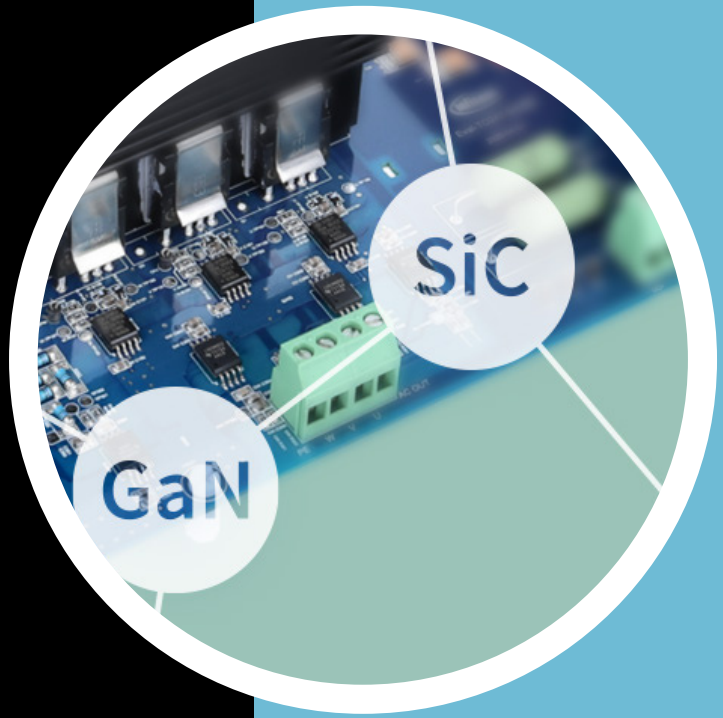
SEMINAR

Wide-bandgap semiconductor technology and industry

-Opportunities for today and the future

Tuesday, June 28, 2022 / TU Delft



Our Speakers:

Prof. Umesh Mishra

Prof. Victor Veliadis

Dr. Peter Friedrichs

Mr. Frank Boschman

Dr. Carlos Castro

Dr. Alan Zhou

Prof. Peter Wilson

Agenda

- Welcome speech TU DELFT 09:30-09:40
- Welcome speech Netherland Academy of Technology and Innovation 09:40-09:50
- Prof. Umesh Mishra 10:00-10:40
- Prof. Victor Veliadis 10:40-11:20
- Dr. Peter Friedrichs 11:20-12:00
- Lunch break 12:00-13:00
- Mr. Frank Boschman 13:00-13:40
- Dr. Carlos Castro 13:40-14:20
- Dr. Alan Zhou 14:20-15:00
- Coffee break..... 15:00-15:20
- Prof. Peter Wilson 15:20-16:00
- Panel discussion..... 16:00-17:00

The state of the art of GaN technology and industry

Presentation 1 10:00-10:40AM

IEEE Fellow, Fellow of the National Academy of Inventors and Member of the National Academy of Engineering

Prof. Umesh Mishra -UC Santa Barbara

Prof. Umesh K. Mishra is the Donald W. Whittier Professor of Electrical and Computer Engineering at UC Santa Barbara. He received his MSc from Lehigh University in Bethlehem, PA, and his Ph.D. from Cornell University in Ithaca, NY. He is a Fellow of the IEEE, Fellow of the National Academy of Inventors and Member of the National Academy of Engineering and has received numerous awards including the IEEE David Sarnoff Award, the ISCS Welker Medal and the ISCS Quantum Device Award for his contributions to the development and commercialization of Gallium Nitride (GaN) electronics. He also received the Distinguished Educator Award from the IEEE MTT Society. He has graduated over 60 Ph.D. students and with over 35 in the general area of GaN materials and devices. He has co-founded two companies – Nitres (GaN RF and LEDs acquired by CREE in 2000) and Transphorm (GaN power conversion) of which he is currently Chairman and CTO.

The state of the art of SiC technology, Strategy and Practice of US national program-PowerAmerica

Presentation 2, 10:40-11:20AM

IEEE Fellow, Executive Director and CTO of PowerAmerica,

Prof. Victor Veliadis-PowerAmerica

Dr. Victor Veliadis is Executive Director and CTO of PowerAmerica, a WBG semiconductor power electronics consortium. At PowerAmerica, he has managed a budget of $146 million that he strategically allocated to 200 industrial and University projects to accelerate WBG semiconductor clean energy manufacturing, workforce development, and job creation. His PowerAmerica educational activities have trained 410 University full-time students in applied WBG projects, and engaged 4100 attendees in tutorials, short courses, and webinars.

Dr. Veliadis is an ECE Professor at NCSU and an IEEE Fellow and EDS Distinguished Lecturer. He has 27 issued U.S. patents, 6 book chapters, and over 125 peer-reviewed publications. Prior to entering academia and taking an executive position at Power America in 2016, Dr. Veliadis spent 21 years in the semiconductor industry where his work included design, fabrication, and testing of SiC devices, GaN devices for military radar amplifiers, and financial and operations management of a commercial semiconductor fab. He has a Ph.D. degree in Electrical Engineering from John Hopkins

SiC power technologies and business – empower a greener future

Presentation 3, 11:20-12:00AM

Vice President SiC at Infenion, member of ECPE and ITRW boards, co-chair for JEDEC JC70.2 committee

Dr. Peter Friedrichs - Infineon

Dr. Peter Friedrichs was born in 1968 in Aschersleben, Germany. After achieving his Dipl.-Ing. in microelectronics from the Technical University of Bratislava in 1993, he started a Ph.D work at the Fraunhofer Institut FhG-IIS-B inErlangen. His focus area of expertise was the physics of the MOS interface in SiC power MOSFETs. In 1996 he joined the Corporate Research of the Siemens AG and was involved in the development of power switching devices on SiC, mainly power MOSFETs and vertical junction FETs. He joined SiCED GmbH & Co. KG, a company being a joint venture of Siemens and Infineon and originated from the former Siemens research group, on March the 1st, 2000. Since July 2004 he was the managing director of SiCED, responsible for all technical issues. In 2009 he achieved the Dipl.-Wirt.-Ing. From the University of Hagen. After the integration of SiCED's activities into Infineon he joined Infineon on April 1st, 2011 and acts currently as Vice President SiC. He is a member of the ECPE board and acts as co-chair for the JEDEC JC70.2 committee. He holds numerous patents in the field of SiC power devices and technology and is an author or co/author of more than 50 scientific papers and conference contributions.

Novel equipment for advanced power modules

Presentation 4, 13:00-13:40PM

Managing Director
Boschman Groep B.V.

Mr. Frank Boschman - Boschman Technology

Frank Boschman studied Technical Physics at H.T.S Enschede, and he also received his MBA at TSM Business School. Today, Frank Boschman holds several directing and advisory positions: Director Boschman Holding B.V., Managing Director Boschman Groep B.V., Managing Director Holland High Tech Centre China. He served as board member of Business Cluster Holland Semiconductors and member of advice commission of Dutch national innovation program STW-HTSM.

Nexperia power GaN for mainstream applications

Presentation 5, 13:40-14:20PM

Vice President and General Manager GaN - Nexperia

Dr. Carlos Castro - Nexperia

Dr. Carlos Castro serves as Vice President and General Manager GaN for Nexperia and has more than 15 years of experience in power and automotive semiconductors. Prior to joining Nexperia, Carlos led the IGBTs/MOSFETs/SiC discretes business and automotive electronics activities at Littelfuse. Earlier he was in charge of Marketing and Application Engineering for automotive MOSFETs and led the Technical Marketing group for Electric Drive Train at Infineon Technologies. He has been granted several patents for power semiconductor devices and has been author of multiple papers and conferences presentations. Carlos holds a MSc and a PhD in Electrical Engineering from the Technical University of Dortmund, Germany and the University of Granada, Spain.

Building a “GaN Valley” ecosystem in Europe

Presentation 6, 14:20-15:00PM

CEO of BelGaN

Dr. Alan Zhou - BelGaN

Dr. Alan Zhou is the CEO of BelGaN BV, a leading automotive GaN Foundry in Belgium. Dr. Zhou is an accomplished entrepreneur with over 30 years of experience as a visionary in semiconductor industry, having held numerous technical and executive positions at leading global companies. He most recently served as Managing Partner and Chief Strategy Officer of AnXin Capital, a billion dollar private equity firm focused on global compound semiconductor investments in Norstel, GaN Systems, Navitas, and United SiC. Previously, as Vice President at Qualcomm, Dr. Zhou was responsible for smartphone chipset business(>$3B). While at AT&T Bell Labs, Lucent Microelectronics and Agere Systems as Managing Director, he established the first communications IC design center and launched the first GSM handset reference design to a dozen leading communications and consumer electronic companies. He also founded or co-founded several companies, including MEMS Inc (IPO on NASDAQ), Top Global USA (acquired) and Bellnet Technologies. Dr. Zhou received his Ph.D. and M.S. degrees in EECS from MIT and has over 30 patents granted.

IEEE International Technology Roadmap for Wide bandgap power semiconductors (ITRW)

Presentation 7, 15:20-16:00PM

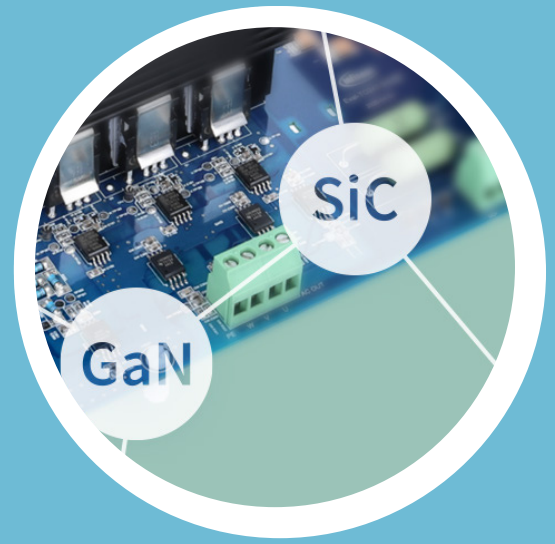
VP of IEEE PELS and chair of IEEE ITRW

Prof. Peter Wilson - University of Bath

Professor Peter Wilson is a full Professor at the University of Bath, England, where he is the leader of the Power Electronics Research Group, Founder of the Autonomous Robotics Centre, Appointed Head of the Electronic and Electrical Engineering Department. Professor Wilson is a Fellow of the Institution of Engineering and Technology (IET) in the UK, Fellow of the UK Higher Education Academy and was elected as Fellow of the British Computer Society (BCS). He is also a Chartered Engineer of the Engineering Council of the UK and IEEE Senior Member.

Professor Wilson served as VP of the IEEE Power Electronics Society for many years and during his tenure co-founded and co-chairs the IEEE PELS International Technology Roadmap for Wide Bandgap Power Semiconductors (ITRW) since 2015, championing the drafting and release of the first PELS roadmap in 2019. He represents PELS on the IEEE IRUG (International Roadmap User Group), coordinating IEEE roadmaps in general, where PELS has been a trailblazer in the development of roadmaps by the IEEE.

Seminar overview



Making the EU CHIP ACT successful!

This seminar will highlight the state of the art of technology and industry of wide bandgap semiconductors (WBS), which are becoming the cornerstones of future power electronics, communication (5G and beyond) and optoelectronics.

WBS have not only many grand scientific challenges, but also vital economic and societal impact for today and the future. This seminar consists of presentations by global leading experts from both academia and industry, and a panel discussion with key stakeholders from Dutch semiconductor eco-system.

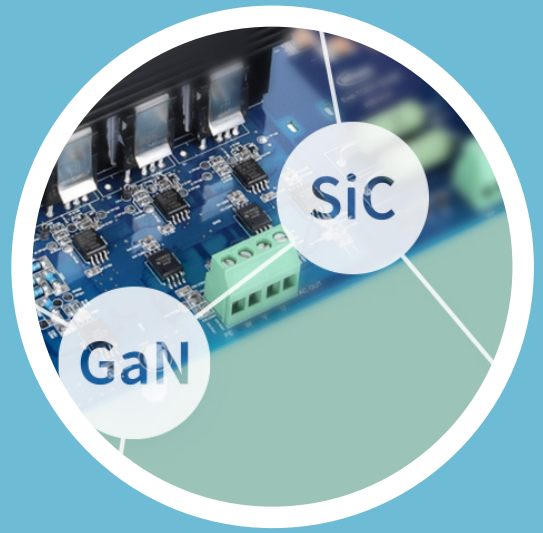
Organizer:

TU Delft Delft University of Technology

Co-organizers:

AcTI technologie&innovatie
Netherlands Academy of Technology and Innovation

Holland Semiconductors



Due to limited seats, pre-registration is required, by contacting secr-ectm-ewi@tudelft.nl

Deadline: 10th of June!