Webinar on “SiC Fabrication in a Silicon Fab”

Time: 5:30-6:30 p.m. Indian Time, July 17, 2024 (8:00-9:00 a.m. Eastern Time, July 17)

Organized by IEEE Bombay Section, EDS Chapter and SemiX, IIT Bombay

Speaker: Dr. Victor Veliadis
Prof. at North Carolina State University,
Executive Director and CTO of PowerAmerica

Online (Microsoft Teams) link: Joining Link
Meeting ID: 457 556 440 720 **Passcode: rbYhDM**

Please register on: https://forms.gle/ujJ4rKa9e63btxuK7

Abstract:

SiC chips are displacing their incumbent silicon counterparts in several high-volume power applications. As SiC market share continues to grow, the industry is lifting remaining barriers to mass commercialization including the higher-than-silicon chip cost that increases disproportionately with area, defects that limit chip yield and area, reliability and ruggedness concerns, and the need for a trained workforce to skillfully insert SiC devices into power electronics circuits.

With respect to fabrication, the SiC industry is successfully leveraging the fully-depreciated legacy silicon fab infrastructure, and is making the relatively small financial investments that allow mature silicon fabs to process SiC. Consequently, SiC chip fabrication alongside silicon has emerged as a cost-effective model that exploits silicon manufacturing economies of scale. In this tutorial, key aspects of SiC fabrication technology will be summarized with an emphasis on non-silicon-compatible processes streamlined for mass SiC manufacturing. The latter include dry etching SiC, substrate thinning, heated implantation and high temperature annealing, CTE-matched metallization, ohmic contact formation, improved gate oxide interface quality, transparent wafer handling, as well as edge termination techniques that maximize blocking voltage.

Speaker Bio:

Dr. Victor Veliadis is Executive Director and CTO of PowerAmerica, a member-driven wide-bandgap (WBG) semiconductor power electronics consortium. At PowerAmerica, he has managed a budget of $156 million that he strategically allocated to over 210 industrial and University projects to accelerate WBG semiconductor clean energy manufacturing, workforce development, and job creation. His PowerAmerica educational activities have trained 430 full-time University students in applied WBG projects and engaged over 7000 attendees in tutorials, short courses, and webinars. Currently, he is negotiating a $64M U.S. Department of Energy PowerAmerica renewal to further catalyze WBG power technologies.

Dr. Veliadis is an ECE Professor at NCSU and an IEEE Fellow and EDS Distinguished Lecturer. He has 27 issued U.S. patents, 8 book chapters, and over 150 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 the 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 University (1995).

About SemiX:

IIT Bombay Center for Semiconductor Technologies, SemiX was established in 2022.
Semi stands for Semiconductors. *X* represents the integration of various semiconductor solutions – materials, equipment, devices, circuits, packaging, and software. SemiX enables semiconductor industry-focused R&D, workforce development, and entrepreneurship by serving as a common interdisciplinary platform to integrate the energies of (a) Multiple involved academic disciplines, (b) Indian semiconductor consumers and creators, (c) Academicians, entrepreneurs, investors, and government policymakers.

Organizing Committee

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