

# International Conference and Exhibition on **Mesoscopic & Condensed Matter Physics**

June 22-24, 2015 Boston, USA

## GaN HEMTs for next generation electronics

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Gallium Nitride (GaN) High Electron Mobility Transistors (HEMTs) has been identified as essential components for realizing efficient, compact, high power switching systems and high power amplifiers at high frequencies for low loss power conversion and transmission. In the recent years, significant advancements have been made towards GaN-on-Si power devices due to the lower cost and large size availability of the Si substrate. Si substrate, however, presents constraints such as limited voltage handling capabilities, which are more apparent at elevated temperatures. In my talk, I will discuss a novel technology solution of Si substrate engineering to mitigate the high voltage and high temperature restrictions imposed by Si for power electronics applications with an improved device figure of merit. Several kilo Volt devices have been achieved in a cost effective way with high temperature capabilities required by various demanding applications such as downhole tools in oil and gas industry, automobiles and photovoltaics among others. The second part of my talk will focus on developing a unique technology with a deep sub-micron gated large periphery GaN-HEMTs with high power density for future kilo Watt Radio Frequency (RF) amplifier systems.

### Biography

Puneet Srivastava received his PhD degree from IMEC-Belgium in 2012. During his PhD, he worked on the fabrication and technology integration of GaN-on-Si HEMTs for power switching applications. Since September 2012, he has been working as a Postdoctoral Associate in Electrical Engineering and Computer Science at MIT, USA with Prof. Tomás Palacios in the area of high frequency GaN-electronics. He has authored/co-authored over 40 international publications and holds 2 patents. He serves as an Editor for IETE-Technical Review and a Member of IEEE and IEEE Electron Device Society (EDS). He is a Reviewer of various journals such as IEEE Electron Device Letters, IEEE Transaction on Electron devices among others.

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