SESSION 8b: GaN/SiC PROCESSING

Chairs:

Michelle Bourke, *Oxford Instruments Plasma Technology*
Scott Sheppard, *Cree, Inc.*

For the majority of years that CS MANTECH has been in existence, the sessions were dominated with GaAs technology and related processing techniques. This session continues the tradition of a strong process content but in different material systems - GaN and SiC. This session takes you through several of the techniques related to the manufacturing process.

The first paper is from the University of Alberta and discusses the deposition of high-quality ZrO_2 on GaN via atomic-layer-deposition. The technique produces high-capacitance MOS capacitors and high-mobility inversion layers. This is then be followed by a student paper within this session and is from the Georgia Institute of Technology. The paper discusses the threshold voltage control of recessed-gate III-N HFETs, using an electrode-less wet etching technique. The third paper comes from Northrop Grumman and discusses low-loss metal-on-BCB technology for next generation GaN MMICS.

The second half starts with the evaluation of through-wafer via holes in SiC substrates for GaN HEMT technology from United Monolithic Semiconductors. Paper 5 is from TriQuint Semiconductor. This year they discuss the backside via process on GaN devices and demonstrate an improved integration method. The session concludes with a paper from Samco, Inc. which examines the patterning of the sapphire substrate using a Chlorine-Based ICP etch process to improve the luminance efficiency in nitride LEDs.