

SESSION 1

PLENARY

**Chairs: Paul Cooke, *IQE* and
Scott Sheppard, *Cree, Inc.***

Historically, invited presentations at CS MANTECH have provided some of the boldest and most insightful predictions that have ultimately shaped the compound semiconductor industry. Speakers at prior conferences have predicted mobile phones would be the most rapidly adopted domestic technology in history, handset sales would extend to a measurable fraction of the world's population and that increasing bandwidth requirements would lead to a "Golden Age of Wireless". Despite significant changes in the commercial landscape, the intervening years have seen these, and numerous other speaker's forecasts, come to pass or even surpassed. This year's plenary session continues the theme of looking into the challenges and opportunities that face, and will shape, the CS industry. The session kicks off with two invited presentations that examine where, and how, wireless communications will evolve to sustain the increasing need for mobile bandwidth. The final invited presentation in the session will address the proverbial challenge of Si but specifically as it pertains to power switching, arguable one of the next key application areas for compound semiconductors. In the first talk, Scott Townley from Verizon Corporate Technology will outline the driving factors, technology limitations and requirements that will shape future wireless systems. How operators and equipment suppliers will need to adapt to enable the anticipated increase in mobile data requirements by 2020 and beyond will be presented. This talk will be followed by Jay Kruze, from Amazon Lab126 who will similarly address the designs and technologies that will be required for future mobile devices that employ and require the increased bandwidth. The final talk covers the prospects and potential for wide band gap materials, both SiC and GaN, for power switching applications in the face of the incumbent Si approaches. Anup Bhalla, from United Silicon Carbide, will compare WBG technologies to the current Si Superjunction or IGBT implementation for power conversion and motor control applications.

