

Wide Bandgap Semiconductors

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Abstract

Over the past two decades, wide bandgap compound semiconductor technologies have been developed to deliver high power energy conversion, mm-wave signals generation at higher switching speed with great efficiency. Many emerging GaN and SiC transistors are being adopted into many commercial and military platforms, such as battery-powered electronic vehicles, 5G wireless base stations and satellite links.

To meet these needs, advanced high power and high dynamic range transistor technologies are developed by combining innovations in wide band gap semiconductor substrates, epitaxial materials, device structures, and fabrication processes. Ultra wide band gap semiconductor materials such as diamond are being explored to electrify the energy infrastructures, transportation and communications with more power and efficiency.

This talk will survey recent advances of wide band gap semiconductor technologies and their applications.

Biography

Dr. Young-Kai (Y.K.) Chen, is Deputy Chief Technology Officer at Coherent Corp. and as an adjunct professor at UCLA. He was a Program Manager at DARPA from September 2017 to September 2021. Before joined DARPA in 2017, he was a Senior Director at Nokia Bell Labs supporting research groups to develop high speed electronics and optoelectronics for advanced wireless and optic fiber communication networks. Dr. Chen and his teams contributed to development of integrated lasers, silicon photonics ICs, 2G/3G/4G wireless backhubs, and 100G coherent optic data links.

Dr. Chen received his Ph.D. degree from Cornell University. He is a Fellow of Bell Labs, IEEE and Optica (OSA), a member of the Academia Sinica and National Academy of Engineering, and a recipient of IEEE David Sarnoff Award and Edison Patent Award.