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Wide Bandgap Semiconductor Electronics and Optoelectronics

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Message from the Guest Editors

The development of high-performance ultraviolet photodetector power devices is urgently needed in the fields of security, flame detection, optical switches, imaging, health protection, IC and RF applications, etc. Wide bandgap semiconductors, including Ga_2O_3, GaN, SiC, AlGaN, etc., have created great expectations as promising candidates with which to construct deep-UV photo-detecting devices, Schottky diodes and field-effect transistors, etc. This is due to their useful bandgap (Eg ~ 4.5–5.2 eV), which is sensitive to the solar-blind portion of the electromagnetic spectrum, and their high Baliga's figure of merit, which translates to low direct-current losses and high efficiency. As an optoelectronic device, they offer a promising route to overcoming the weakness of stopping low-energy photons using high-pass filters and phosphors in mature narrow-bandgap silicon-based technologies. Further, as power devices, they offer higher breakdown voltage and a high breakdown electronic field.

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Message from the Editor-in-Chief

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