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Fabrication and characterisation of high temperature operating light emitting diodes from Silicon Carbide

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Light-emitting diodes (LEDs) are semiconductor devices that emit light in a narrow-band spectrum with wavelengths ranging from the infrared to the ultraviolet. This paper will look at the fabrication techniques and characterisation of high temperature operating LEDs from silicon carbide (SiC). SiC has a wide band gap and high thermal conductivity. These unique properties make SiC an ideal candidate for fabricating high-temperature operating semiconductor devices. Most of the LED technology at present uses gallium nitride (GaN) with phosphors. Phosphors have a short life-time and contain rare-earths which are very expensive. In order to overcome these shortcomings, the technology of producing highly efficient SiC-based LEDs has to be explored so as to make them a viable alternative to GaN-based LEDs.

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