# Vacuum ultraviolet quantum efficiency of large-area SiC photodiodes

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**Abstract.** Wide-bandgap semiconductors show great promise for the development of solar-blind, solid-state photodetectors. The wide energy gap between the valance and conduction bands in these materials gives them an inherent cutoff in responsivity in the ultraviolet. By contrast, a traditional Si photodiode has a responsivity cutoff on the infrared part of the spectrum. Insensitivity to visible and infrared radiation is a great aide to measurements where the ultraviolet signal is much less than the visible and IR background. Such applications include solar observations and extreme ultraviolet lithography. SiC is a potentially useful material because of its wide bandgap and the similarity to Si – the processing techniques that have been developed for Si photodiode manufacture are applicable to SiC manufacture. Furthermore, SiC is expected to be resistant to radiation-induced damage. To date, SiC detectors have been available with small active areas due to the difficulty of growing high quality GaN crystals. Here, we present quantum efficiency measurements in the vacuum ultraviolet (5 nm to 254 nm) of large area SiC photodiodes with 100 $mm^2$ active area.