

Investigation of the detection efficiency of polycrystalline diamond detectors with a heavy ion microprobe

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The influence of the crystal structure of chemical vapour deposition (CVD) diamonds on their charge collection efficiency has been investigated by using a heavy ion microprobe with C ions of 5.9 MeV/u. Charge collection maps and pulse-height spectra are discussed. A comparison of the charge collection maps with the corresponding secondary electron image shows that not only the grain boundaries are responsible for the poor charge collection efficiency, but also the single CVD diamond crystal is trapping a significant part of the generated charge.