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Transmission electron microscopy investigation of radiation damage caused by keV implantation in single-crystal diamond.

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<p>An understanding of the types of defects produced during the doping/implantation of diamond remains essential for the optimization of high-temperature, high-power electronic applications.

Thus this study focuses on investigating the nature of the radiation damage produced during the multi-implantation of carbon ions in synthetic type Ib and natural diamonds, according to the CIRA (Cold-Implantation-Rapid-Annealing) routine. The implanted and annealed diamond samples were characterized using bright field transmission electron microscopy (BFTEM) in conjunction with selected area diffraction (SAD).

For low fluence implantations, the damaged diamond retains its crystallinity after annealing at 1600K, while implanting using doses above the amorphisation/graphitization threshold, followed by rapid thermal annealing (RTA) at 1600K, results in a multi-layer of graphite/amorphous carbon close to the surface.

Level (Hons, MSc,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

Yes

Would you like to <br> submit a short paper <br> for the Conference
 Proceedings (Yes / No)?

Yes

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