Contribution ID: **409** Type: **Poster Presentation**

A review on Effect of Ion Implantation on Hexagonal Boron Nitride

Tuesday, 8 July 2014 17:10 (1h 50m)

Abstract content
   (Max 300 words)
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Special chars

The extreme properties of cubic BN (c-BN), similar to or even superior to diamond, have led to a great deal of research on techniques for its synthesis. The study herein focuses on the synthesis of c-BN from the hexagonal phase (h-BN) by radiation effect using the ion implantation process. The effect of varying implantation parameters including the ion mass, the ion fluence (1×10¹⁴ - 1×10¹⁵ ions/cm²), the implantation energy (30 - 150 keV) and implantation temperature, with respect to the end-products are investigated. The presence of the c-BN phase is inferred using glancing incidence XRD (GIXRD) at glancing angles 0.01 ≤ ω ≤ 0.5^o and Scanning Transmission Electron Microscopy (STEM). The GIXRD pattern after implantation exhibited c-BN and r-BN. These diffraction peaks were determined to be dependent on the incident glancing angle's penetration depth for the X-rays, which corresponded to the penetration depth of the different ions in h-BN from simulations. Transmission Electron Microscopy showed high density regions in h-BN after implantation with HRTEM lattice fringes with lattice parameter of the c-BN in the implanted region.

Apply to be
 considered for a student
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Yes

Level for award
 (Hons, MSc,
   PhD)?

PhD

Main supervisor (name and email)
and his / her institution

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

Yes

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Session Classification: Poster1

Track Classification: Track F - Applied Physics