



Contribution ID: 386

Type: **Poster Presentation**

Behaviour of iodine implanted in HOPG after heat treatment

Wednesday, 13 July 2011 17:00 (2 hours)

The behaviour of iodine implanted in highly oriented pyrolytic graphite (HOPG) has been investigated using Rutherford backscattering spectrometry (RBS), scanning electron microscopy (SEM) and x-ray diffraction (XRD). Iodine ions were implanted into HOPG using an energy of 360 keV and a dose of 1×10^{15} atoms cm^{-2} at room temperature. The implanted samples were annealed in vacuum at 900 °C, 1000 °C, 1100 °C and 1200 °C, all for 9 hours. The results revealed that iodine was released from the HOPG at the above annealing temperatures. RBS evaluation of the full width at half maximum (FWHM) and the number of iodine atoms before and after annealing did not reveal Fickian diffusion as the mechanism by which the iodine atoms were released from the HOPG. Evaluation of (002) peak intensities using XRD revealed an increase in preferred orientation of the graphitic layers after heat treatment of 1200 °C. The high resolution SEM micrographs of the HOPG samples before and after heat treatment showed no evidence of alterations on the polished surface.

Level (Hons, MSc, PhD, other)?

MSc

Consider for a student award (Yes / No)?

Yes

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

No

Primary author: Mr MUKHAWANA, Mxolisi (University of Pretoria)

Co-authors: Prof. THERON, Chris (University of Pretoria); Prof. MALHERBE, Johan (University of Pretoria)

Presenter: Mr MUKHAWANA, Mxolisi (University of Pretoria)

Session Classification: Poster1

Track Classification: Track A - Condensed Matter Physics and Material Science