



Contribution ID: 22

Type: **Poster Presentation**

SHI irradiation enhanced diffusion of silver implanted into polycrystalline SiC

Tuesday, 4 July 2017 17:10 (1h 50m)

Migration behavior of silver (Ag) ions implanted into polycrystalline CVD-SiC was investigated by Rutherford backscattering spectrometry (RBS), Raman spectroscopy and scanning electron microscopy. Silver ions of 360 keV were implanted into CVD-SiC to a fluence of $2 \times 10^{16} \text{ cm}^{-2}$ at room temperature. Some of implanted samples were irradiated with xenon (Xe) ions of 167 MeV to a fluence of $3.4 \times 10^{14} \text{ cm}^{-2}$ and $8.4 \times 10^{14} \text{ cm}^{-2}$ at room temperature. Both the as-implanted and implanted then irradiated samples were isochronal annealed at temperatures ranging from 1100 oC to 1400 oC in steps of 100 oC for 10 h. Raman results of the as-implanted samples showed that implantation of Ag resulted in the amorphisation of SiC, while irradiation of the as-implanted samples with Xe ions caused some recrystallization. Recrystallization was already taking place after annealing at 1100 oC in both samples. After annealing at 1400 oC, un-irradiated samples were fully recrystallized, while the irradiated samples were still not fully recrystallized. Ag started to move towards the surface without broadening after annealing at 1100 oC in the un-irradiated samples, while no movement of Ag was detected in the irradiated samples up to 1200 oC. Diffusion of Ag was detected after annealing at 1300 oC for the irradiated samples and no diffusion was detected in the un-irradiated samples up to 1400 oC. Therefore, SHI irradiation somehow enhanced diffusion of Ag.

Apply to be considered for a student award (Yes / No)?

yes

Level for award (Hons, MSc, PhD, N/A)?

PhD

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

yes

Primary author: Mr ALI ABDELBAĞI, Hesham Abdelbagi (University of Pretoria)

Co-authors: Prof. MALHERBE, Johan (University of Pretoria); Dr HLATSHWAYO, Thulani (University of Pretoria)

Presenter: Mr ALI ABDELBAĞI, Hesham Abdelbagi (University of Pretoria)

Session Classification: Poster Session 1

Track Classification: Track F - Applied Physics