Contribution ID: **5** Type: **Poster Presentation**

Room Temperature and High Temperature Ion Implantation of Cadmium (Cd) in Glassy Carbon: Diffusion behaviour and Raman Analysis.

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Abstract content
   (Max 300 words)

In the context of radioactive waste disposal related to the back end of the nuclear fuel cycle, we studied the diffusion of cadmium ions implanted in glassy carbon. Glassy carbon is a material considered as a possible migration barrier for radioactive elements in the nuclear waste storage process due to its high thermal stability and chemical inertness even in extreme environments. Glassy carbon samples were implanted with 360 keV Cd ions to a fluence of 2 x 10ˆ16 cm-2 at room temperature and at 430 oC. The samples were isochronal vacuum annealed in the temperature range 350 o C to 700 oC. Rutherford backscattering spectroscopy (RBS) was used to investigate the diffusion of the implanted cadmium implanted at various temperatures. Broadening of the cadmium profile (i.e. measurable diffusion) was observed at temperatures beyond 400 oC. Microstructural information of the substrates was obtained from Raman spectroscopy. Implantation at room temperature and at 430 oC produced different changes in the Raman carbon D and G peaks suggesting that the radiation caused damage to the microstructure of glassy carbon. Some recovery (but not complete) followed the different annealing temperatures and annealing times.

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