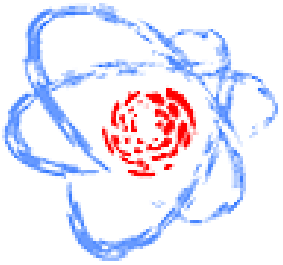

Contribution ID: **11** Type: **not specified**

A study of the defect formation of CuO nanostructures under He+ ion irradiation

Monday 9 June 2025 11:20 (10 minutes)

Copper (II) oxide (CuO) is a p-type semiconductor with a narrow bandgap of 1.21 to 1.55 eV, non-toxic, abundant in the Earth's crust and stable. These characteristics make the CuO a suitable material for applications in optoelectronic devices. The aim of this work is to study the possibility of extending the employment of this material in extraterrestrial or other environments under ions irradiation. In this study, we investigate the structural changes, the defects formation and evolution which takes place in the nanostructured CuO layer under light ions irradiation. The CuO samples were irradiated with doses from 3.13 ·1013 to 3.38·1016 particles/cm2. The obtained CuO nanostructures were studied by scanning electron microscopy (SEM), X-rays diffraction (XRD) and positron annihilation spectroscopy (PAS). The transfer of energy to the samples during irradiation can lead to radiation induced processes like lattice recovery and defects formation or reduction (i.e. vacancies creation and complexes creation and reduction). The characterization results indicate, mainly, the lattice recovery at short irradiation times and the competition of three radiation induced processes at longer irradiation times.

Summary

Presenter: FORTUNÉ FÁBREGAS, Silvia María (FLNP-JINR)

Session Classification: Section Talks

Track Classification: Sectional talks: FLNP