

**SWIFT HEAVY ION INDUCED DISSOLUTION OF GOLD NANOPARTICLES
EMBEDDED IN SILICA MATRIX GROWN BY CO-EVAPORATION**

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Abstract: Gold nanoparticles embedded in silica matrix (~100nm) that were prepared by co-evaporation technique. After deposition, the samples were annealed at different temperatures in inert environment for 30 minutes. UV visible absorption measurements of as-deposited and annealed samples were performed. No signature of nanoparticle formation was found in case of as deposited 10 atomic % Au in silica, whereas signature of nanoparticles was evident by SPR peak at ~ 520 nm in the case of as-deposited 20 atomic % Au in silica. Decrease in full width at half maximum (FWHM) in the absorption spectra with increase in annealing temperature indicated the agglomeration of Au nanoparticles. The size of nanoparticles was estimated using Fermi velocity formula. The annealed films were irradiated with 100MeV Ag ions at different fluences. UV-visible absorption measurements of pristine and irradiated films showed a clear signature of dissolution with ion flux. Rutherford Backscattering (RBS) spectrometry was used for quantification of gold. X-ray diffraction (XRD) measurements showed that Au nanoparticles are in face centred cubic (FCC) face.