Contribution ID : **127** Type : **Poster**

Formation of nanostructures in Silicon Oxynitrides by Ion Implantation

Thursday, 20 November 2014 17:30 (90)

The photoluminescence signal of Amorphous silicon oxynitrides can be tunable by controlling their stoichiometry. The change in PL is related to defect centres and phase structures changes [1]. A coupling between the surface plasmon resonace of Au nanoparticles with these PL centres would lead to develop new optoelectronic and light source devices.

To study this process we implanted 2 MeV Au ions at room temperature with a fluence of 5 X 1016 ions/cm2, following a 60 minute thermal annealing at different atmospheres and temperatures between 1000℃ to 1100 ℃. The different size distributions were determined via Small Angle X-ray Scattering, while the structural parameters were determined by EXAFS [2]. As a result, Au nanoparticles with an average radius between 1-8 nm were found, where the size distribution showed a strong dependence with N concentration.

[1] Huang R. et al., Bright red, orange-yellow and white switching photoluminescence from silicon oxynitrides films with fast decay dynamics, Opt. Mat. Express 4 2 205 (2014)
[2] Giulian R., et al., The influence of annealing conditions on the growth and structure of embedded Pt nanocrystals, J. Appl. Phys. 105 2 044303 (2009)

Keywords or phrases (comma separated)

Au nanoparticles, silicon oxynitrides, ion implantation

Summary

Primary author(s) : Mr MOTA SANTIAGO, Pablo (Australian National University)

Co-author(s) : Dr KREMER, Felipe (Australian National University); Prof. RIDGWAY, Mark (Australian National University); Dr KLUTH, Patrick (Australian National University)

Presenter(s) : Mr MOTA SANTIAGO, Pablo (Australian National University)

Session Classification : Welcome Function, Poster Session, Exhibition

Track Classification : Advanced Materials