



Séminaire Invité

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Mercredi 8 Juin 2016
Salle de conférence LMS - 14H00 (5-10.26)



13H30

Rare-earth luminescence in nanocrystalline garnets at ambient and extreme conditions

Nanocrystalline materials exhibit superior optical properties compared to bulk counter parts when the sizes of the particles are reduced to the nanometer regime. The properties can be tuned to predetermined requirements offering new possibilities for miniaturization of devices. Hence, it is interesting to present structural and luminescence properties of rare earth (RE^{3+}) ions doped nanocrystalline gallium garnets at ambient and extreme conditions of pressure and/or temperature.

The nanocrystalline gallium garnets have been synthesized in a single-phase of garnet structure with an average grain size of around 50 nm by sol-gel technique. The morphology, particle size distribution and vibrational modes of the gallium garnets will be presented. The Stokes and anti-Stokes luminescence spectra and decay curves of RE^{3+} -doped nano-garnets will be explored. The studied nano-garnets show intense white luminescence visible to the naked eye at a laser power of less than 30 mW. All the results indicate that the RE^{3+} ions-doped nano-garnets could be potential materials for optical sensor and light emitting device applications.