

Creation of $Ga_xCo_{1-x}ZnSe_{0.4}$ ($x = 0.1, 0.3, 0.5$) Nanoparticles Using Pulse Laser Ablation Method

Authors : Yong Pan, Li Wang, Xue Qiong Su, Dong Wen Gao

Abstract : To date, nanomaterials have received extensive attention over the years because of their wide application. Various nanomaterials such as nanoparticles, nanowire, nanoring, nanostars and other nanostructures have begun to be systematically studied. The preparation of these materials by chemical methods is not only costly, but also has a long cycle and high toxicity. At the same time, preparation of nanoparticles of multi-doped composites has been limited due to the special structure of the materials. In order to prepare multi-doped composites with the same structure as macro-materials and simplify the preparation method, the $Ga_xCo_{1-x}ZnSe_{0.4}$ ($x = 0.1, 0.3, 0.5$) nanoparticles are prepared by Pulse Laser Ablation (PLA) method. The particle component and structure are systematically investigated by X-ray diffraction (XRD) and Raman spectra, which show that the success of our preparation and the same concentration between nanoparticles (NPs) and target. Morphology of the NPs characterized by Transmission Electron Microscopy (TEM) indicates the circular-shaped particles in preparation. Fluorescence properties are reflected by PL spectra, which demonstrate the best performance in concentration of $Ga_{0.3}Co_{0.3}ZnSe_{0.4}$. Therefore, all the results suggest that PLA is promising to prepare the multi-NPs since it can modulate performance of NPs.

Keywords : PLA, physics, nanoparticles, multi-doped

Conference Title : ICHEP 2019 : International Conference on High Energy Physics

Conference Location : Paris, France

Conference Dates : September 19-20, 2019