

## A New Synthesis Method of Nanopowder Materials

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A method for the preparation of nano-sized powders is presented. Several materials have been prepared and characterized by X-Ray Diffraction and Scanning Electron Microscopy. For example phosphors such as  $Y_2O_3$  doped with  $Eu^{3+}$  and  $ZnGa_2O_4$  doped with  $Mn^{2+}$  or  $Eu^{3+}$  were prepared and their luminescent properties studied. In the same manner we prepared ionic conducting ceria based materials with the general formula  $Ce_{1-x}Ln_xO_{2-y}$  ( $Ln = Gd$  or  $La$ ). Sintering of these powders was studied to determine their conductivity at different temperatures. The surface specific area of as prepared conducting powders was determined by BET technique to be as high as  $29 \text{ m}^2/\text{g}$ . This method for producing nanoparticles has also been shown to suitable to produce nanoparticulate wide band-gap gallium nitride GaN.

Figures 1 and 2 show respectively SEM images of the as-synthesized  $ZnGa_2O_4$  phosphor and the ionic conducting material  $Ce_{0.8}La_{0.2}O_{1.9}$ .

Figure1

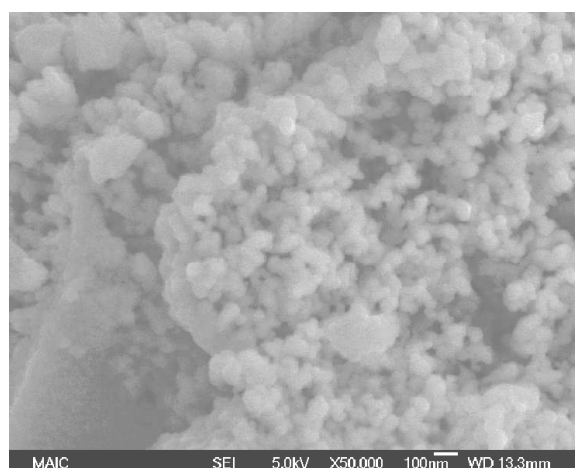


Figure2

