Supplementary material (ESI) for Journal of Materials Chemistry

Synthesis procedure

Tb^{3+} /Sm^{3+}activated CGS nanophosphors were prepared by solvothermal process with the composition $Ca_2Gd_{8-x-y}Tb_{x(=1)}Sm_{y(=0\ to\ 2)}Si_6O_{26}$. The stoichiometric amounts of high purity grade calcium nitrate tetrahydrate ($Ca(NO_3)_2{\cdot}4H_2O$), gadolonium nitrate hexahydrate ($Gd(NO_3)_3{\cdot}6H_2O$), terbium nitrate pentahydrate ($Tb(NO_3)_3{\cdot}5H_2O$), Samarium nitrate hexahydrate ($Sm(NO_3)_3{\cdot}6H_2O$) and tetraethyl orthosilicate ($Si(OC_2H_5)_4$) were dissolved in 40 ml of 2-propanol. All reagents were taken without any further purification and stirred vigorously by using the magnetic stirrer until the formation of homogeneous solution and was transferred into a stainless steel autoclave with a Teflon liner (80ml capacity and 50 % filling). It was then heated to 230 °C at a rate of 2 °C/min and maintained for 5h with magnetic stirring (at 180 rpm) to make stable networks between the reactants. After gradually cooling down to room temperature, the precipitate was separated by a centrifugal separator with 3000 rpm for 3 min and then dried at 50 °C for a day in the ambient atmosphere. The dried powder was sintered at 1200 °C for 5h and was brought to room temperature.