OB13- PERSISTENT LUMINESCENCE OF BARIUM ALUMINATE DOPED WITH Eu^{2+} PREPARED BY THE COMBUSTION METHOD

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Persistent luminescent materials containing Eu^{2+} have been studied extensively in the last years. The $MAl_2O_4:Eu^{2+},Dy^{3+}$ (M = Ca, Sr, Ba) materials are usually prepared by ceramic methods using annealing at high temperatures (about 1500 °C) for a long time in a reducing atmosphere. In order to obtain $BaAl_2O_4:Eu^{2+},Dy^{3+}$ at low temperature, without a reducing atmosphere and with nanoscale particles, the combustion method was used with urea as the fuel. The material was efficiently prepared at 400 °C without a reducing atmosphere and was characterized by X-ray powder diffraction, Scanning Electron Microscopy (SEM), infrared absorption spectroscopy as well as with luminescence spectroscopy with life time and luminance measurements.

The analyses demonstrated the formation of the $BaAl_2O_4$ material evidenced by the X-ray pattern (Fig. 1) with efficient reduction of Eu^{3+} to Eu^{2+} as shown by the luminescence spectra (Fig. 2). The SEM image is shown in Fig. 3.

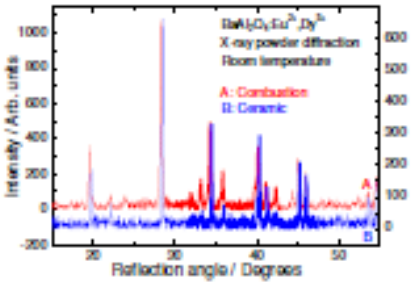

Fig. 1: X-ray patterns of the material prepared by a) combustion and b) ceramic methods.

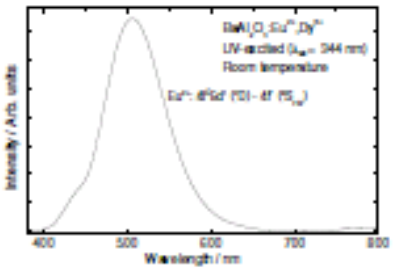

Fig. 3: SEM image of $BaAl_2O_4:Eu^{2+},Dy^{3+}$.

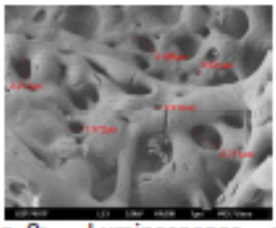

Fig. 2: Luminescence spectrum of $BaAl_2O_4:Eu^{2+},Dy^{3+}$ with UV-excitation.