Structural and spectroscopic studies of Lu_2O_3/Eu^{3+} nanocrystallites embedded in SiO_2 sol-gel ceramics.

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Streszczenie

Preparation and optical properties of Lu_2O_3/Eu^{3+} nanocrystals embedded in silica gel glass are described. The structure of the obtained ceramics was determined by XRD and transmission electron microscopy. It was found that with increasing sintering temperature the Lu_2O_3/Eu^{3+} nanocrystallites underwent transformation into monoclinic $Lu_2Si_2O_7$ nanocrystallites. The fluorescence properties were investigated as a function of thermal treatment of the samples. It was found that after sintering at 1250 °C the fluorescence lifetime increased to 1.5 ms at room temperature. The material studied in this work exhibits a very high intensity of fluorescence with potentials for display application.

Słowa kluczowe

Nanocrystallites, Lutetium oxide, Europium, Optical properties, Lutetium silicate, Electron microscopy

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