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Variation of emission color of $Y_3Al_5O_{12}$:Ce induced by thermal treatment at reducing atmosphere.

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Streszczenie

Nanocrystalline powders of $Y_3Al_5O_{12}$:Ce (YAG:Ce) were prepared using Pechini technique and precipitation with urea at 80–90 °C. It was shown that material obtained using Pechini procedure, after heating at 900–1000 °C is crystallographically pure, while that made with urea is contaminated with $Y_4Al_2O_9$ and $YAlO_3$. For all powders, heating at reducing atmosphere of nitrogen–hydrogen mixture at 1000 °C caused a red shift of the Ce^{3+} luminescence by about 20–25 nm. The effect was stronger for the powder prepared with urea. Also this powder was characterized by a longer decay time of the Ce^{3+} emission indicating the treatment at reducing atmosphere diminished nonradiative relaxation probability of the excited electrons.

Słowa kluczowe

YAG:Ce, Luminescence, Emission color, White LED

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