



Size-dependent luminescence in $\text{Y}_2\text{Si}_2\text{O}_7$ nanoparticles doped with Ce^{3+} ions.

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Streszczenie

Powders and thin films of nanocrystalline yttrium disilicate ($\text{Y}_2\text{Si}_2\text{O}_7$) doped with Ce^{3+} have been prepared by a sol-gel method. Structure and morphology of the synthesised samples have been determined and spectroscopic properties compared. The triclinic $\alpha\text{-Y}_2\text{Si}_2\text{O}_7$ form (space group $P\bar{1}$) for the powders annealed between 1000°C and 1200°C has been found. A total conversion into a thortveitite-type monoclinic $\beta\text{-Y}_2\text{Si}_2\text{O}_7$ polymorph after annealing of powder samples at 1400°C (space group $C2/m$) has been observed. In the case of films even at 1300°C the basically pure triclinic $\alpha\text{-Y}_2\text{Si}_2\text{O}_7$ phase was observed with luminescent spectroscopy. The influence of grain size, controlled by thermal treatment, on the structure and luminescence properties of the fabricated materials are presented and discussed.

Adres publiczny

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Strona internetowa wydawcy

<http://link.springer.com>