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Photon conversion in Tb,Yb:Ca_xSr_{1-x}Al₂O₄ nanocrystals

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Abstract

In this work the fabrication and the photoluminescence properties of Ca_xSr_{1-x}Al₂O₄ nanocrystals doped with Ca, Tb and Yb are investigated. The photoluminescence quantum yield measured at 980 nm of the Yb doped Ca_xSr_{1-x}Al₂O₄ nanocrystals is found to be 8% for an excitation in the ultraviolet range. However the quantum efficiency decreases with the insertion of Tb. Photoluminescence excitation experiments and time-resolved photoluminescence both conclusively demonstrate that no energy transfer between Tb and Yb occurs in this host matrix.

Keywords: photon conversion, downconversion, photovoltaics, rare earth

1. Introduction

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