New synthesis procedure for nanoparticulate Lu_2O_3:Eu and spectroscopy of the product.

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Rok wydania

2008

Czasopismo

Journal of Alloys and Compounds

Numer woluminu

451

Strony

591-594

DOI

10.1016/j.jallcom.2007.04.195

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Fabrication procedure of nanocrystalline Lu_2O_3:Eu powders from organic–inorganic emulsion is presented and the behavior of the precipitate upon heat-treatment is analyzed. It is proved that heating at 800–850 °C converts the raw material into $Lu_2O_2SO_4$:Eu, which decomposes further to Lu_2O_3:Eu when heated at 1000 °C or above. Research with synchrotron radiation revealed that free exciton is able to transfer effectively its energy to Eu^{3+} ions in Lu_2O_3:Eu nanosized powder, which is in contrast to the findings for micron-sized ceramics of the same composition.

Słowa kluczowe

Nanoparticles, Energy transfer, Luminescence, Free exciton

Adres publiczny

https://doi.org/10.1016/j.jallcom.2007.04.195

Strona internetowa wydawcy

http://www.elsevier.com