

Effect of Europium(ii) Chloride on Synthesis of Europium Dibenzoylmethide Triethylammonium-based Mechanoluminescent Material

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Introduction

There are so many mechanoluminescent (ML) materials synthesized at higher temperatures and most of them are based on inorganic materials. We have succeeded to synthesize the Europium doped Dibenzoylmethide triethylammonium (EuD₄TEA) ML material at low temperature of 70°C. The EuD₄TEA was usually synthesized through europium(iii) chloride or europium(iii) nitrate [1].

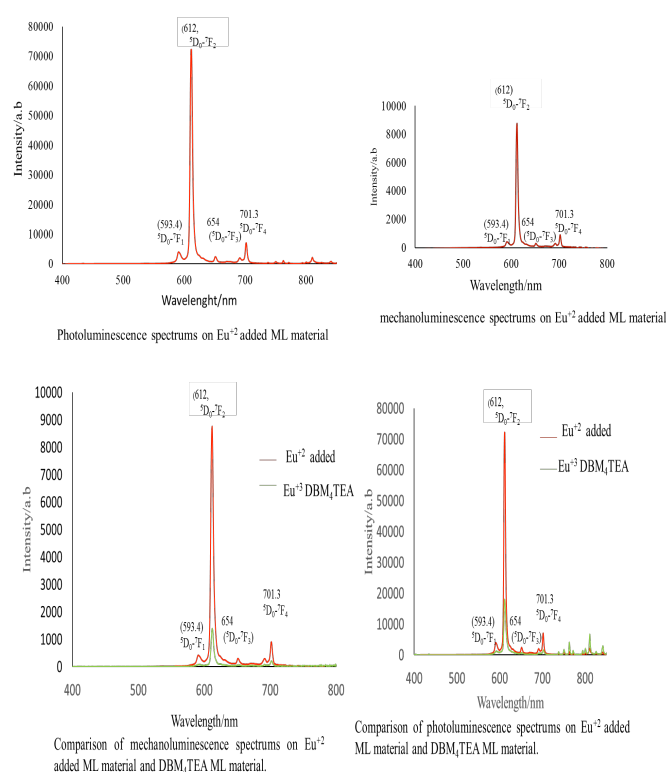
In this report we have used europium(ii) chloride instead of europium(iii) nitrate hexahydrate. The synthesized material has shown an enhancement of both the ML and photoluminescence (PL) intensities.

Experimental

Firstly, ethyl alcohol (99.9%, Wako) was warmed upto 70°C and then 1, 3-diphenylpropane-1, 3-dione (99%, Wako) was added and stirred. After the solute was completely dissolved, europium(ii) chloride (99.9%, Wako) was added into the solution. Trimethylamine (99.8%) was added and solution was stirred further for 20 min. Finally, completely dissolved warm solution was kept under slow cooling. Experiment was repeated with europium(iii) nitrate hexahydrate and ML and PL intensities were

characterized for both synthesized materials.

Result and discussion



Figures show the results of PL and ML properties measured for the synthesized materials with and without Eu²⁺. It is found that the ML material synthesized with europium(ii) chloride shows an increased ML intensity.

Reference

- [1] R.S. Fontenot, K.N. Bhat, W.A. Hollerman, M.D. Aggarwal, Mater. Today 14 (2011) 292.