

CEEC-TRAC4

BOOK OF ABSTRACTS

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**4th Central and Eastern European Conference
on Thermal Analysis and Calorimetry
28-31 August 2017
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**4th Central and Eastern European Conference on
Thermal Analysis and Calorimetry**

CEEC-TAC4

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Synthesis, characterization and investigation of luminescence properties of $\text{CaMO}_4:\text{Eu}@\text{MCM-41}$ composites

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Mesoporous materials endowed with photoluminescence property upon functionalization have potential in many fields such as non-toxic, stable sustained drug storage/release [1,2]. Especially red emitting phosphors prepared with Eu^{3+} ions have attracted much attention in the technological applications.

In this study, we aimed at obtaining luminescent $\text{CaMO}_4:\text{Eu}@\text{MCM-41}$ composites via sol-gel process. The composites thus prepared were characterized via XRD, FT-IR, SEM-EDX, N_2 adsorption/desorption analysis, PL and TL spectra. In order to determine the optimum synthesis conditions thermal analysis studies of the initial reactants was made via TG/DTA combined system. A three step decomposition is observed in the DTG curve presented in Figure 1. The first decomposition occurs in the temperature range 450-544 °C, while the second step is observed in the range 544-722 °C and the third step occurs in the range 722-1002 °C. In the temperature range 25-1002 °C a total weight loss of 18.58 % was observed. Above 1050 °C no weight loss was observed. The mentioned temperatures are the temperatures when phase transitions start and the synthesis were carried out at these temperatures.

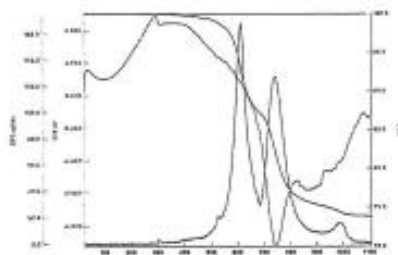


Figure 1. TG/DTA curves of the initial mixtures of CaMO_4

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[1] Sauer J., Marlow F., Spliethoff B., Schuth F., Chem. Mater. 14 (2002) 217.