

Effect of Eu^{3+} Concentration on Crystallization and Luminescence Properties of $\text{CaO-MgO-Al}_2\text{O}_3\text{-SiO}_2\text{-ZnO}$ Glass-Ceramics

Thursday, May 21, 2015 1:00 PM (3h 30m)

Eu^{3+} -doped glass-ceramics were prepared in the system $\text{CaO-MgO-Al}_2\text{O}_3\text{-ZnO-SiO}_2$. Crystallization and luminescence properties of the glass-ceramics were studied by XRD, SEM, and fluorescence spectroscopy. After the heat treatment at the appropriated conditions, the crystalline phase found in the glass-ceramics was diopside ($\text{CaMg}(\text{SiO}_3)_2$) and $\text{Mg}(\text{Si}_2\text{O}_6)$. There was no pronounced effect on the phase type due to presence of the Eu^{3+} impurity. Participation of the doping content slightly altered the glass-ceramics microstructure. However, the fluorescence spectra determined from glass-ceramics with addition of Eu^{3+} ions have shown the involvement of the diopside phase during phosphorescence process. With aided by Eu^{3+} ions, a much stronger emission spectra was observed comparing to that of the corresponding glass. Increases of Eu^{3+} concentration also give glass-ceramics with stronger emission of the light in red region.

Primary authors: Prof. NIYOMPAN, Anuson (Department of Physics, Faculty of Science, Ubon Ratchathani University, Ubon Ratchathani, THAILAND 34190); Ms SENANON, Wipada (Department of Physics, Faculty of Science, Ubon Ratchathani University, Ubon Ratchathani, THAILAND 34190)

Co-author: Mrs TIPAKONTITIKUL, Rungnapa (Department of Physics, Faculty of Science, Ubon Ratchathani University, Ubon Ratchathani, THAILAND 34190)

Presenter: Ms SENANON, Wipada (Department of Physics, Faculty of Science, Ubon Ratchathani University, Ubon Ratchathani, THAILAND 34190)

Session Classification: Poster-3

Track Classification: Material Physics, Nanoscale Physics and Nanotechnology