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Synthesis of LaF_3:Ce^{3+} Nanoparticles With Tunable Emissions[1]
MINGZHEN YAO, WEI CHEN, University of Texas at Arlington — Lanthanide based nanoparticles have a good potential as a new kind of luminescent materials. In this presentation, we report the synthesis of Cerium-doped LaF_3 nanoparticles in dimethyl sulfoxide (DMSO) using chemical reaction at different temperature. The samples prepared at low temperature have a similar emission as the samples prepared in water. However, at high temperatures around 180^oC, the emission wavelength shifts with the reaction time, from 490 nm to 650nm. The formation of LaF_3:Ce^{3+} nanoparticles have been identified by X-ray diffraction (XRD) and transmission electron microscopy(TEM). The TEM results show that the average sizes of these nanoparticles are from 10 nm to 13 nm. The mechanisms for the tunable emissions are being investigated.

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Mingzhen Yao
University of Texas at Arlington

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