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Determination of the Crystallization Temperature of Mullite by Luminescence Spectra of Europium and Chromium Ions

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Received: July 16, 2019

Revised: July 16, 2019

Accepted: July 25, 2019

The luminescence spectra of Cr^{3+} and Eu^{3+} ions embedded in mullite ceramic samples are studied. The samples were annealed at temperatures from 600 to 1200°C. From the temperature of 800°C, the spectra demonstrated the presence of a newly-formed crystal phase. The appearing of the crystalline phase is revealed by significant changes in some parameters of the luminescence spectrum. At temperatures from 920 to 1200°C, the crystalline form manifested itself as a stable mullite phase.

Keywords: mullite, luminescence spectra, phase transition, impurity center.