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D 07 MELTING BEHAVIOR OF THE SYSTEM LiF-Gd_{0.5}Lu_{0.5}F₃
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The main objective to propose the construction of the phase diagram of the system LiF-GdF₃-LuF₃ is to obtain crystals with congruent melting behavior. To determine the lutetium concentration that makes the system congruent, it was constructed a section of the phase diagram, where the mixture compositions were fixed at 50 mol% LiF: 50 mol% Gd_{1-x}Lu_xF₃ and 0 < x < 1. This composition was determined to be 50 mol% LiF: 50 mol% Gd_{0.5}Lu_{0.5}F₃ at 800 °C. Afterwards the phase diagram of the system LiF-Gd_{0.5}Lu_{0.5}F₃ was constructed. Fluoride powders were used to prepare the samples; the compounds were weighted and mixed in a mortar prior the measurements. The samples weighing around 50 mg were placed in open platinum crucibles without a reference material. The measurements were performed under a flux of purified helium, with heating rates of 10 and 40 °C/min. To determine the phases present in each two-phase regions of the phase diagrams, two samples of each composition were melted u

nder a flux of hydrogen fluoride gas to obtain the phase equilibria. Powder X-ray diffraction and scanning electron microscopy were used to determine the phases present and to observe respective the microstructures, preliminary results will be presented.