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Study On Some Rare-Earth Doped Halides For Optical Applications

In this research work, we prepared SmI₂ anhydrous hydrate rare-earth iodides by using an eco-friendly Annealing technique using He or H₂ furnace for vacuum dehydration. To develop and apply these scintillators effectively, it is crucial to have an efficient and economical method to produce high-purity Samarium di-iodide (SmI₂). We conducted a comparative study on the dehydration mechanisms of SmI₂ hydrate and its mixture with HI using I-V and fluorescence spectroscopy. The photoluminescence excitation spectrum of Samarium di-iodide at 374nm is recorded and studied, because of their, luminescent features, most intensive peaks, and high color purity. The thermal decomposition process of individual Samarium di-iodide hydrate was found to be as SmI₂, and we comprehensively studied the solution combustion mechanism. Samarium di-iodide is a strong electron reducing agent. The importance of SmI₂ will be discussed.

Keywords: Samarium di-iodide , Rare-earth.

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