

Elaboration and characterization of a KCl single crystal doped with Er³⁺

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Description

This paper reports the growth and spectral properties of Er³⁺ doped KCl single crystals, the KCl:Er³⁺ with dimension of 20 mm in diameter and 100 mm in length were obtained by the Czochralski (Cz) melting solution growth method. Crystallographic structure using X-ray diffraction pattern analysis (XRD), the optical absorption spectra in the wavelength range from 200 to 1800 nm, the photoluminescence (PL) and the radioluminescence spectra of KCl single crystal doped with Er³⁺ ions were measured. The results reveal that the Er³⁺ is incorporated in the KCl host and occupy substitutional K⁺ sites position in the crystal, the Er³⁺ elements have a good optical properties and a new scintillators KCl:Er³⁺ were successfully synthesized with the Czochralski (Cz) technique.