

Crystal Growth of Transition Metal Ion Doped Rutile

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Transition metal ions, such as Sc, V, Cr and Fe, doped rutile crystals were grown by Floating Zone method. Growth conditions for high quality of crystals depending on the concentration of doped ions were investigated. Grown crystals were cut and polished to thin wafers, and then various types of defects such as homogeneities, low angle grain boundaries, scattering centers, and oxygen vacancies were analyzed. The effects of transition metal ions on defect formation are discussed. Results and discussions on absorption and fluorescence spectra and electrical properties of grown crystals were also reported.