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Luminescence of synthetic rutile implanted with cobalt ions

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Abstract

Synthetic rutile plates have been implanted with high-energy cobalt ions. Unusually long-wavelength luminescence (at 820 nm) of Ti VI 3+ ions in rutile, whose intensity increases upon cobalt implantation, has been revealed. Analysis of the luminescence spectra and the luminescence excitation spectra made it possible to refine the electron energy level diagram of rutile and determine the energy levels of Ti3+ impurity ions occupying vacant octahedra with the C2h symmetry in the mineral structure. © 2007 Pleiades Publishing, Inc.

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