Luminescent properties of natural copper and silver iodide

L.A. ZYRYANOVA, N.N. BOROZNOVSKAYA AND K.V. TOLOCHKO

Tomsk State University, Tomsk, Russia

Studies have been performed on the structural characteristics and roentgenoluminescence spectra (RL) of copper and silver iodides from the zone of oxidation of the Rubtsovsk polymetallic deposit (Rudnyi Altai). The investigation on the RL characteristics of the natural Cu and Ag iodides has demonstrated their dependence on the Cu/Ag-ratio and the structural type of a mineral. It has been established that the RL spectra of the cubic marshite (Cu, Ag)I, miersite (Ag, Cu)I and hexagonal iodargyrite (AgI) differ in the intensity and spectral composition of the emission in the wave length range of 400-800 nm. The correlation has been discovered between the silver content entering the minerals of the (Cu, Ag)I - (Ag, Cu)I series and the RL intensity in the range of 600-800 nm. The shift of emission bands in the range of 600-800 nm from iodargyrite to miersite and farther to marshite into the long-wave zone has been established. In the iodargyrite RL spectra, the short-wave RL band (420-450 nm) has been found, the emission character of which coincides with the excitonic luminescence of 2*H* and 4*H* polytypes of AgI.

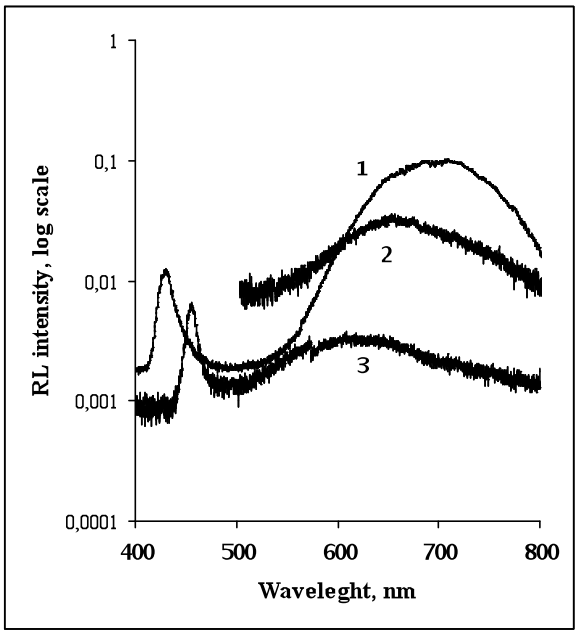

Fig. 1: Roentgenoluminescence spectra (RL) of copper and silver iodides: 1 – marshite, 2 – miersite, 3 – iodargyrite

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