

## Abstract

This paper deals with the study of luminescence of uranyl minerals in ultraviolet radiation. Mineral samples of metaautunite, schröckingerite, natrozippeite and saléeite were studied. Twenty samples were selected for research and they were unambiguously determined using X-ray diffraction and energy dispersive spectrometry. For each sample, a luminescence spectrum was taken at 405 nm excitation radiation. Luminescence spectra were analyzed.

The luminescence spectra of metaautunite contain 6 energy maxima. The maximum with the highest intensity is at an average position of 525.1 nm. Anomalous values are shown by two samples with an admixture of metauranocircite. The luminescence spectra of saléeite show a shift to lower wavelengths compared to metaautunite, caused by a change in the main cation (Ca – Mg). The spectra of saléeite show 5-7 energy maxima and the maximum with the highest intensity is at an average position of 521.2 nm. The spectra of schröckingerite contain 8-9 energy maxima and the maximum with the highest intensity is at an average position of 505.4 nm. An anomalous spectrum is shown by a sample with liebigite admixture. The luminescence spectra of natrozippeite are different compared to the other minerals used in this work. The spectra do not show isolated energy maxima, but one broad asymmetric band. This band is a convolution of 3 energy maxima. Maxima at the same position have noticeably different intensity. The position of the first maximum in the direction of increasing wavelength is 532.7 nm on average.

It was found that the luminescence spectra of different samples of the same mineral are very similar. The shape of the spectrum curve and the position of the luminescence energy maxima are similar. According to the obtained research results, it is possible to potentially use the positions of the luminescence energy maxima as analytical methods for determining the mineral phase of an unknown sample.