

## **Spectra and Kinetics of Luminescence of Sellaite ( $\text{MgF}_2$ ) and Fluorite from the Suran Deposit (S. Urals).**

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The collection of main fluorite and sellaite varieties from the unique Suran deposit has been studied. Special attention was paid to the investigation of the rare fluorine mineral - sellaite. The unusually large suran sellaite aggregates were described earlier by the author in collaboration with Dr. E. Nastasienko and Dr. M. Somov. These aggregates occur in originally monomineral sellaite veins bearing subsequent overprints of tectonic fractioning and fluorite mineralization.

Comparison of the luminescence spectra (UV and X-ray excitation), luminescence lifetimes (nanosecond X-ray excited spectroscopy) and excitation spectra of natural and artificially irradiated sellaite samples yielded the following results.

It has been found that suran sellaite crystalline structure contains native electronic centers of  $\text{F}$ ,  $\text{F}_2^+$ -type and  $\text{F}_2^-$  defects, which are mobil and sensitive to external influence. Under conditions of X- and  $\gamma$ - irradiation or as a result of  $300^\circ\text{C}$  annealing this imperfections strongly interact with each other and with group of impurity centers, such as  $\text{Mn}^{3,2+}$  ions in different lattice sites.

The excitation spectra of the yellow and red manganese emission show that highly efficient energy transfer occurs from  $\text{F}_2^-$  centers to the different point of Mn -ions.

It's interesting that basic type of the  $\text{TR}^{3+}$  point defects in suran fluorite is presented by rhombic  $\text{TR}^{3+} - \text{Na}^{1+}$  centres. Their concentration is not abundant that is reflected in high values of  $\tau_{1/2} = 0.35$  microsecond for self-trapped excitons of fluorite crystalline matrix.