OPTICAL SPECTROSCOPY STUDIES OF NEW INORGANIC $K_2Bi_{0.8}Yb_{0.2}(PO_4)(MoO_4)$ DOPED WITH Er^{3+} PHOSPHORS

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The absorption of two or more photons leading to the emission of light at a wavelength shorter than the excitation wavelength is described as the upconversion (UC) process. UC materials possess many outstanding optical features and these materials are widely used in many devices such as solid-state lasers, temperature sensors, optical fibers or displays technologies [1].

A series of up-converting materials doped with Er^{3+} ions was synthesized by solid state reaction method. All of the synthesized materials have shown similar emission spectra. The most intense sample, under 980 nm laser excitation, was doped with 5% Er^{3+} and the main emission peaks are centered in the orange-red region. These peaks can be attributed to the $^4F_{9/2} \rightarrow {}^4I_{15/2}$ transitions of Er^{3+} ions (see Fig. 1).

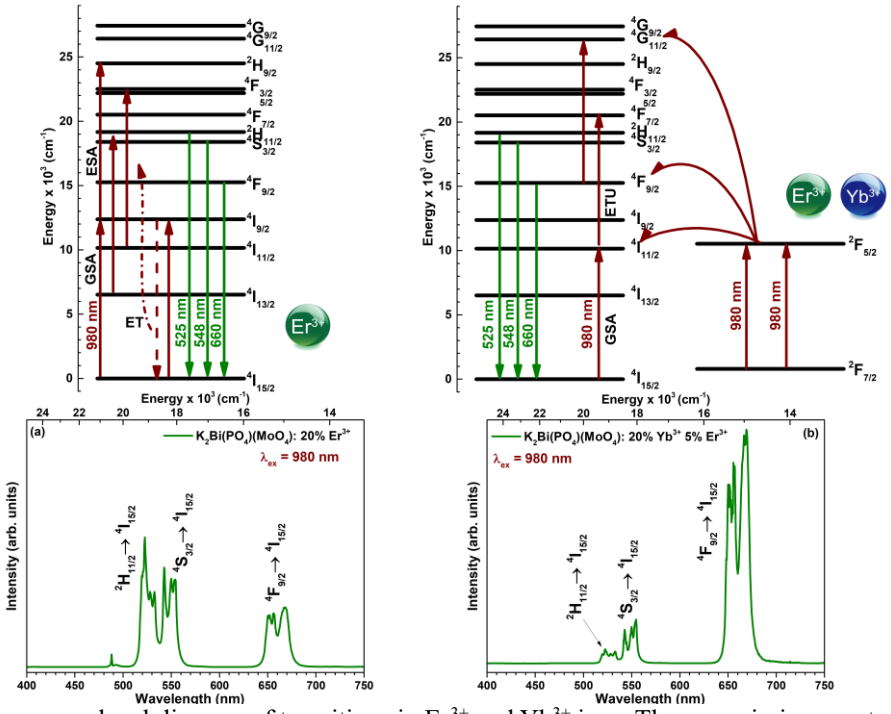

Fig. 1. Schematic energy level diagram of transitions in Er^{3+} and Yb^{3+} ions. The up-emission spectra below represent $K_2Bi(PO_4)(MoO_4)$ doped with Er^{3+} (a) and co-doped with Er^{3+}-Yb^{3+} ions (b) under 980 nm excitation.

The upconversion luminescence emission of these materials have been studied and will be particularly presented and discussed in the poster.

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References

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