

## Optical and Magnetic Investigation of $\text{Eu}^{2+}$ Ions in Strontium Metaborate Single Crystals

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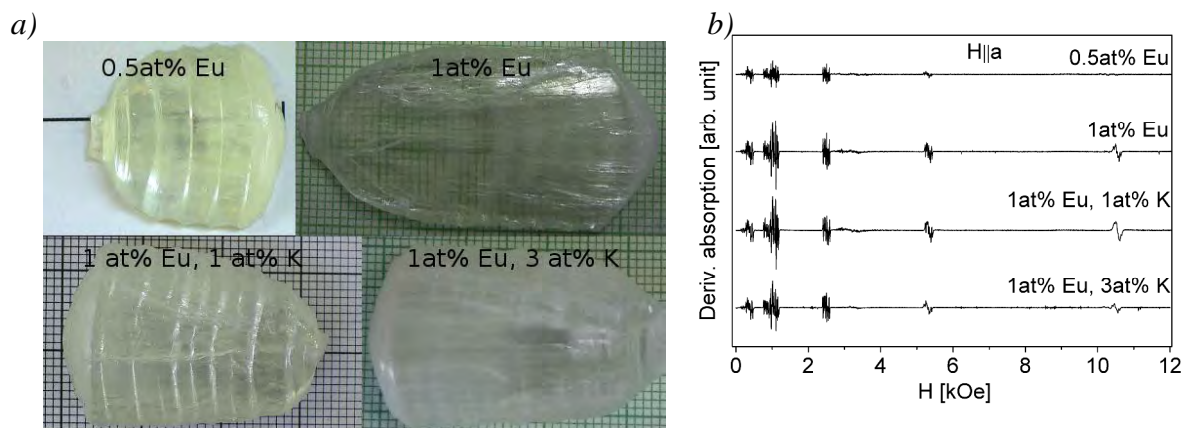
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Strontium metaborate belong to a large family of compounds that are suitable for use as matrices for luminescent dopant ions. Similarities of ionic radii of strontium and divalent europium makes it a good candidate to host  $\text{Eu}^{2+}$  ions. Despite this mainly trivalent europium is observed during optical measurements. It was shown for the first time [1] that emission of divalent europium ions can be observed in  $\text{SrB}_2\text{O}_4$  single crystals but co-doping with alkali ions weakens this emission [2].

The magnetic ground state of  $\text{Eu}^{2+}$  ions allowed us to use the electron paramagnetic resonance technique in order to check how the co-dopant influences the oxidation state of europium in the  $\text{SrB}_2\text{O}_4$  matrix and to study the local symmetry of  $\text{Eu}^{2+}$  centers. In this presentation the results of EPR measurements will be shown. The optical and magnetic measurements will be compared and discussed.



**Figure 1.** As-grown  $\text{SrB}_2\text{O}_4$  single crystals (a) and EPR spectra recorded at  $H \parallel a$  axis (b)

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- [1] M. Głowacki, W. Ryba-Romanowski, R. Lisiecki, R. Kowalski, M. Berkowski, P. Solarz, *J. Lumin.* **169B** (2016) 807-810, doi: 10.1016/j.jlumin.2015.02.051.  
[2] M. Głowacki, P. Solarz, W. Ryba-Romanowski, I.R. Martín, R. Diduszko, M. Berkowski, *J. Cryst. Growth* **457** (2017) 107–111, doi: 10.1016/j.jcrysgro.2016.07.007.