

## Impurity segregation coefficient measurements in LiF-LuF<sub>3</sub>-YF<sub>3</sub> systems doped by Nd<sup>3+</sup>

Marisov M., Koryakina E., Naumov A., Semashko V., Korableva S., Ivoilov N.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### Abstract

In present work the results of measurements of segregation coefficient of Nd<sup>3+</sup> ions in LiLu<sub>x</sub>Y<sub>1-x</sub>F<sub>4</sub> (x=0-1) crystals are presented. Two methods for Nd<sup>3+</sup> ions concentration measurements in the crystals are used. The first one - X-ray fluorescence analysis (XRFA) - is used to establish the absolute concentration of impurity ions, and the second - optical absorption spectroscopy (OAS) - allows to estimate not absolute, but relative impurity concentration. By comparison of the results given by both methods the integral cross-sections of 4I<sub>9/2</sub>-2G<sub>7/2</sub> transitions of Nd<sup>3+</sup> ions doped in these crystals were estimated. Thus, the standard samples, allowing to establish the absolute Nd<sup>3+</sup> ions concentration in LiLu<sub>x</sub>Y<sub>1-x</sub>F<sub>4</sub> (x=0-1) crystals by means of OAS-method, were created. © 2011 SPIE.

<http://dx.doi.org/10.1117/12.881691>

---

### Keywords

Activated crystal, Laser media, Rare earth ions, Segregation coefficient