

## **Formation of a stable bivalent state of Yb ions in Na<sub>4</sub>Y<sub>6</sub>F<sub>22</sub>:Ce<sup>3+</sup>, Yb<sup>3+</sup> crystal under intense UV irradiation**

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### **Abstract**

The evolution dynamics of absorption spectra induced in samples of Na<sub>4</sub>Y<sub>6</sub>F<sub>22</sub>:Ce<sup>3+</sup>, Yb<sup>3+</sup> crystal by radiation resonant with 4f-5d transitions of Ce<sup>3+</sup> ions was studied and analyzed. It was found that at least two types of color centers with different life times are induced in the studied crystal. It is established that the group of absorption bands in the UV spectral range that demonstrate long-term stability after excitation is caused by the 4f<sup>13</sup>-4f<sup>12</sup>5d transitions of bivalent ytterbium ions. The sequence of processes that lead to the reduction of ytterbium ions from the trivalent to the bivalent state is proposed. © Pleiades Publishing, Ltd., 2011.

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