P17

CONTRIBUTION OF THE Ce^{3+} ON THE $Gd^{3+} \rightarrow Eu^{2+}$ ENERGY TRANSFER IN RbY_3F_{10}

J. Metin, M. El-Fettah, R. Mahiou and J. C. Cousseins

Laboratoire de Chimie des Solides (URA 444), Université Blaise Pascal (Clermont-Ferrand) et ENSCCF, 63177 Aubière Cédex (France)

When located at alcaline site in RbY_3F_{10}, the Eu^{2+} ion gives a $^6P_{7/2} \rightarrow {}^8S_{7/2}$ ($4f^7 \rightarrow 4f^7$) fluorescence line whose maximum intensity is obtained for a concentration of 3 % (Eu^{2+}).

The optimization of this fluorescence in view of the realization of a solid U.V. laser has led us to study the fluorescence of $Rb(Gd,Ce,Y)_3F_{10} : Eu^{2+}$ at 300 and 77 K. When the material is codoped with Ce^{3+} ($c < 3$ %) and Eu^{2+}, a $Ce^{3+} \rightarrow Eu^{2+}$ very slight transfer can be observed together with an increasing absorption of the Eu^{2+} ion in the 280-310 nm range (Ce^{3+} excitation band). When Gd^{3+} ion takes the place of Y^{3+}, the transfer is assisted and the maximum fluorescence of the Eu^{2+} ion is obtained for $RbGd_{2.94}Ce_{0.06}F_{10} : Eu^{2+}$ (3 %) upon excitation of Ce^{3+} at 295 nm at both 77 and 300 K.

So we have evidenced for the first time a $Ce^{3+} \leftrightarrow Gd^{3+} \rightarrow Eu^{2+}$ transfer.