ENERGY TRANSFER INFLUENCE ON THE OPTICAL PROPERTIES OF Er3+-Yb3+ CODOPED a-Al2O3 THIN FILMS

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In this work, we have studied the photoluminescence (PL) at 1.5 Rm under direct excitation of the Er3+ ions at 800 nm (4I13/2→4I15/2 ground state absorption). The influence of the Er3+→Yb3+ energy transfer and Yb3+→Er3+ backtransfer on the PL and lifetime of the 4I13/2 level have analyzed as a function of Er3+ doped-Yb3+ doped layers separation. Upconversion emission at about 545 nm (4S3/2,2H11/2→4I15/2) has been observed under 800 nm excitation. The dependence of this upconversion intensity on the layer separation shows a similar trend than that observed for the 1.5 Rm luminescence.