

Investigation of Er, Er:Yb and Er:Tm systems in silica sol-gels.

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Complexes of the type $[Ln_2(Ala, Ile)_4(H_2O)_8](Cl)_6$ (Ala: alanine, Ile: isoleucine, $Ln=Er^{3+}$, $Er^{3+}:Tm^{3+}$, $Er^{3+}:Yb^{3+}$) were incorporated into silica sol-gels. The samples were transferred into glasses by heating in an N_2/CCl_4 and air atmospheres. Emission and absorption spectra for gels and glasses were measured and compared to those of the lanthanide precursor salt single crystals. Positions of broadened f-f bands of lanthanide ions make the resonance energy transfer between Er^{3+} , Yb^{3+} and Tm^{3+} much more probable. Intensity analysis was performed, values of oscillator strengths were determined and τ_λ parameters were calculated from the Judd-Ofelt relation. Intensity of erbium hypersensitive transition were used as a test of metal clustering.

Słowa kluczowe

Er^{3+} , $Er^{3+}:Tm^{3+}$, $Er^{3+}:Yb^{3+}$, Sol-gel, Spectroscopy

Adres publiczny

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