



Optica Applicata 2005(Vol.35), No.4, pp. 725-733

Interface interactions and optical properties of novel photonic nanocomposites consisting of porous glasses doped with organic luminophore molecules

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Keywords

soda-borosilicate porous glasses, rhodamine 6G, trishydroxyquinoline aluminum (Alq3), benzophenone, luminescence, interface interactions, NIR spectroscopy

Abstract

Absorption and luminescence spectra of nanocomposites consisting of photonic molecules rhodamine 6G, trishydroxyquinoline aluminum (Alq3) complex and benzophenone adsorbed on soda-borosilicate porous glasses from ethanol and dichloromethane (DCM) solutions are investigated. The effect of sorption interactions at the interface between the glass pore surface and the organic media on luminescent and optical characteristics of the nanocomposites was investigated by NIR spectroscopy. It was shown that spectral changes observed in the absorption and emission spectra of the luminophores in the porous glasses are determined by the balance between physical interaction of the organic molecule with different adsorption centers on the pore walls and solvation effect.



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