Abstract

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Spectroscopic properties in simple cost glasses with alkaline oxides doped with Sm2O3 for display laser emission

This research investigates the influence of the concentration of Sm+3 ions on the properties of a new borosilicate glass system with the composition 50B2O3– 14SiO2– 20Li2O– 15Na2O– 1.0Al2O3-x(Sm2O3), where x=100, 200, 300, 400, and 500 ppm. The glasses are characterized by XRD, FTIR, UV– Vis-NIR, and photoluminescence spectra. The XRD results proved that all glasses prepared are amorphous. Moreover, it was found that the values of density (?), and refractive index (n), rise with increasing of Sm+3 content. Otherwise, the value of molar volume, optical energy gap, and boron-boron distance decrease by increasing Sm+3 concentration. The structure of glasses studied was investigated by computing Internuclear(ri), Polaron radius