

Synthesis of Sm^{3+} doped Bismuth Borate Glasses by Melt Quenching Technique

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Abstract: Trivalent rare earth ions exhibit specific electronic transitions that results in unique optical properties, such as sharp and well defined UV-Visible absorption and luminescence. Due to these properties rare earth doped materials have great technological applications in optical fibers, amplifiers, energy saving lighting devices, and lasers. This paper presents a systematic investigations on synthesis of Sm^{3+} doped bismuth borate glasses by melt quenching technique. Concentration of samarium ion is varied from 0 to 3 mol%. The presence of heavy metal ions reduces the phonon energy of the borate network, which increases the The phonon energy of borate network reduces in presence of heavy metal oxides such as lead oxide or bismuth oxide and so luminescence quantum efficiency of doped rare-earth ions increases. The prepared glass samples are ready for further physical and optical characterization.

Keywords: Borate, rare-earths, phonons

