

SYNTHESIS AND OPTICAL CHARACTERIZATION OF (Pb,Bi)TiO₃ BOROSILICATE GLASS SYSTEM

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ABSTRACT

Lead and lead free bismuth titanate borosilicate glasses were prepared by melt quench method using high purity AR grade chemicals. X-ray diffraction has been recorded to confirm the amorphous nature of the prepared glass samples. The optical characterizations were performed by using Infrared (IR) and Raman spectroscopic techniques at room temperature. IR measurements were recorded over a continuous wavenumber range 400-5000 cm⁻¹ and Raman spectroscopic measurements were carried out in wavenumber range 1000-2000 cm⁻¹. The different absorption peaks / bands were observed in IR spectral patterns. These spectral bands occurs due to Bi and Pb towards lower wavenumber sides while diborate and triborate network units were towards higher wavenumber sides. These glasses are very important for the application of X-rays radiation protection.

KEYWORDS: Lead bismuth titanate glasses; XRD, IR and Raman Spectroscopy.