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# Spectroscopic analysis of P2O5–ZnO–Na2O doped glasses

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The wide range of technological applications of phosphate glasses enable them to occupy high rank in the science of glass. This is due to, the ease of network modification of the phosphate glasses via additive other modifiers character, low glass transition temperature, high thermal expansion coefficient, high electrical conductivity and very high transmission in the ultraviolet region. These characteristics open the way to make them one of the most commonly utilized glasses in many applications. They are used for instance, in optoelectronic devices, laser host materials and solid electrolytes in solid state ionic devices. Also, it is found that phosphate glasses become electronic conductors or semiconductors, depending on the relative ratio of the added transition metal oxides that represent a transition from an isolated modifier to link through non-bridging oxygen. Oxide glasses containing transition metal oxides (TMO) are of continuing interest, because of their applicability in memory switching, electrical threshold, and optical switching devices, etc. The structural and electronic properties of these glasses as well as their optical, magnetic, and mechanical properties depend on the relative proportions of the different valence states of the TM ions present.
This paper includes the investigation of P2O5–ZnO–Na2O glasses doped with various concentrations of NiO in the range from 1 to 6 mol %. The prepared samples were subjected to different tests such as X-ray diffraction, UV-VIS spectrophotometer, Fourier transform infrared spectroscopy (FTIR) and ac conductivity. From these measurements found that all composites have optical filter behavior in the VIS and IR regions, also they show grate dielectric properties which make it can be used in wide industry applications. All data were analyzed in terms of current theories.

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