**The conduction mechanism and dielectric behavior of cadmium bismuth silicate glasses**

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**Abstract**. By using the traditional melt-quench method, cadmium bismuth silicate glasses with composition; 20CdO∙(80-x)Bi2O3∙xSiO2 (10≤x≤50 mol%) were fabricated. Impedance spectroscopy was used to examine the conduction and relaxation mechanisms in prepared glasses over the range of frequency 10Hz−7MHz and temperature 473−703 K. Values of dc conductivity (σdc), the activation energy for dc conduction (Edc), frequency exponent parameter (s), and relaxation energy (Eτ) were extracted from the experimental impedance data. The conductivity spectra follow Jonscher’s power law and the obtained conductivity values were found to be compositional dependent ascribed to the existence of mixed former effect in understudy glasses. The frequency exponent parameter increases with frequency and approaches unity at higher frequencies. For each glass composition, almost equal values of Eτ and Edc show that the charge carriers have to cross a similar energy barrier in relaxation and conduction processes. The exact overlaying of normalized electrical modulus plots as a single master curve signifies temperature-independent dynamical processes at various frequencies.

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