

Elastic moduli prediction and correlation in soda lime silicate glasses containing ZnO.

Abstract

Soda lime silicate glass (SLS) containing zinc oxide (ZnO) was prepared and its elastic properties through the principle of Rocherulle's model were investigated. Different density, dissociation energy and elastic moduli were calculated theoretically for each glass samples containing different weight percentage of ZnO and these values were compared with experimental results by using ultrasonic pulse echo technique. Thereafter, the values of elastic moduli (including Young's modulus, bulk modulus, shear modulus and Poisson's ratio), derived from experimental data of the glass were compared with those theoretically results calculated in term of Rocherulle's model. According to Rocherulle model, the value of Poisson's ratio decreased as weight percentage of ZnO in SLS glass increased and the elastic moduli tends differ to the experimental values and it was further discussed.

Keyword: Elastic moduli; Poisson's ratio; Glass systems.