

Study of Electrical Conductivity of Chalcogenide Glasses of Ge-Te-Se System

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Abstract: *The Ge-Te-Se Samples were prepared on the basis of percentage weight composition. The ac conductivity chalcogenide glasses of Ge-Te-Se system have been studied at temperatures 300 to 450 K and over a wide range of frequencies 50 Hz to 500 KHz. Experimental results shows that the ac conductivity depend on temperature, frequency and Se content. In the lower frequency region, the conductivity is constant and is taken as dc conductivity σ_{dc} . Theoretically this behavior is modeled by transport taking place through infinite random free-energy barriers. The conductivity is found to obey a power relation, $\sigma_{ac} \approx \omega^s$. It is observed that as temperature increases value of frequency exponent s decreases. Thus experimental results agree with the correlated barrier hopping model (CBH).*

Keywords: Ge-Te-Se glasses, ac conductivity, correlated barrier hopping (CBH)

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