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Calorimetric studies of the crystallization process in a-Se75S25-xAgx chalcogenide glasses
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Abstract
Calorimetric studies of amorphous Se75S25-xAgx (x = 2, 4, 6 and 8) chalcogenide glasses are made at different heating rates (5, 10, 15 and 20 K/min) under non-isothermal condition using Differential scanning calorimetry. The values of glass transition temperature and crystallization temperature are observed to be composition and heating rate dependence. From the heating rate dependence of glass transition temperature and crystallization temperature, the activation energy for structural relaxation (ΔEt), the activation energy of crystallization (ΔEc) and the order parameter (n) have been calculated. It is observed that Se75S19Ag6 has a minimum value of activation energy for structural relaxation (ΔEt), which indicates that this particular glass has a larger probability to jump to a state of lower configurational energy and higher stability in the glassy region. On the basis of the obtained experimental data the temperature difference (Tc - Tg) is found to be maximum for Se75S19Ag6, which further indicate that this glass is the thermally most stable in the entire composition range of investigation.

Author Keywords
Activation energy; Amorphous semiconductor; Crystallization kinetics; Glasses

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