Crystallization kinetics of thermally evaporated As.Te.In thin films

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Abstract:

Glassy As45.2Te46.6In8.2 thin films were thermally evaporated onto chemically cleaned glass substrates. Crystallization kinetics were determined under isothermal conditions. Heating the film up to the isothermal temperature with different rates was found to yield films with different electrical characterization. Conductivity of the investigated film was used as a parameter indicating the crystallized fraction \( \chi(t) \). The obtained values of the activation energy for crystallization, the frequency factor and the Avrami index are \((100\pm0.5) \text{ kJ/mol}, (7.31\pm0.04) \times 10^8 \text{ s}^{-1} \) and 1.45, respectively. The non-integer value of the Avrami index indicates that two crystallization mechanisms are responsible for the crystal growth.

Keywords:

As45.2Te46.6In8.2 thin films; Crystallization kinetics; Conductivity

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