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## Crystallization kinetics in Ga-Ge-Te glassy system.

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Chalcogenide glasses have been investigated by different research for decades and the continually increasing interest in these glasses results from their peculiar characteristics of optic, electric and physical-chemistry properties. In the present work, glasses of Ga-Ge-Te system (Ga20Ge10Te70 and Ga10Ge10Te80) were obtained and described before in [1]. The crystallization kinetics of this chalcogenide glass were studied using the DSC technique under non-isothermal conditions at different heating rates, ? (6-20 Kmin-1). The crystallization process has been analyzed using four theoretical models given by Kissinger [2], Ozawa [3], Augis [4], and Vyazovkin (Model Free) [5]. Determination of apparent activation energies according to Kissinger, Ozawa and Augis methods for the two compositions studied allows to observe that the activation energy of the crystallization process, Ec, increases with rising tellurium content, whick can be attributed to lower crystallization tendency in glasses containing higher concentration of Te. This is in agreement with what is known about tellurium molecular structures [6,7] The model free method shows the variation of Ec, as a function of ?. The values of E? show a little variation throughout the entire interval of transformations for Ga20Ge10Te70 (4%), whereas, the dependence of E? for Ga10Ge10Te80 shows a strong dependence on ? (93%). Thus, these results suggest that higher concentration of Te not only promotes the lower crystallization tendency, but also demonstrated that in this sample, the crystallization is determined by the rates of two processes, nucleation and diffusion, therefore, the great difference in the activation energy values could be associated with a multi-step reaction during continuous heating. Keywords: Ga-Ge-Te glasses, Crystallization kinetics, activation energy. [1]. Apyhtin N.N., Mihailov M.D., Panus V.R. et.al. Russ. J. 6 (1980), 383. [2] H. E. Kissinger, Anal. Chem. 29 (1957) 1702. [3] T. Ozawa, Bull. Chem. Soc. Jpn. 38 (1965) 1881. [4] J. A. Augis, J. E. Bennett. J. Therm Anal. 13 (1978) 283. [5] S. Vyazovkin, J. Therm. Anal. 83 (2006) 45. [22] B. Bureau, S. Danto, H.L. Ma, C. Boussard-Plédel. Et.al. J. Solid State Sci. 10 (2008) 427. [23] B. Bureau, C. Boussard-Pledel, P. Lucas. Et. al. Molecules 14 (2009) 4337.