

Nanophysics and physical and chemical materials science

Research features of deformation of nano-microcrystalline auxetics

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By investigation of low frequency internal friction, by examining the dynamic of elastic modules and computer modeling [1,2] was studied the features of micro deformation of nano-microcrystalline Be and In with increasing temperature. It was estimated the influence of the magnitude and sign of Poisson's ratio on the behavior of defects and flowing of processes of deformations. Was modeled the relation of speeds of defects in the samples (Fig.1) and characteristic surface of Poisson coefficients at different temperatures, which satisfactorily describe the experimental results and allow us to explain the anomalies on the temperature and amplitude dependences of internal friction and dynamic modulus in Be and In.

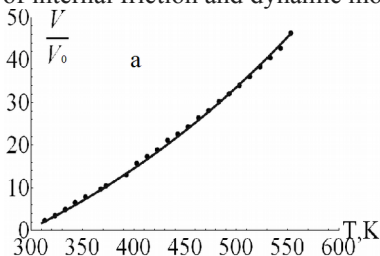


Fig.1. Temperature dependence of the ratio of velocities of defects in microcrystalline Be. Markers labeled experimental results, solid lines – theoretical calculations.

1. Raransky M.D., Oliynich-Lysyuk A.V., Tashchuk O.Yu, Kurek E.I.

Influence of auxetics type on elastic and inelastic features of beryllium // Met.

Phys. Adv. Tech. -2016. -**38**, №7. -P. 941-953.

2. Tashuk O.Yu., Myshlyuk M.K., Oliynich-Lysyuk A.V., Rarans'ky M. D.

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