

Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

Study of electric properties of amorphous $\text{AgGe}_{1+x}\text{As}_{1-x}\text{S}_3$ with content of carbon nanotubes¹ NINA MELNIKOVA, KIRILL KUROCHKA, YANA VOLKOVA, UrFU — Multicomponent copper and silver chalcogenides have been known as promising materials for scientific and applied purposes. These materials are also under intense investigation for application in a phase-change random access memory [1]. In order to obtain materials with a high ionic conductivity component, glassy silver chalcogenides $\text{AgGe}_{1+x}\text{As}_{1-x}\text{S}_3$ with the addition of nanotubes were synthesized. In this work the study of electrical properties of the amorphous chalcogenide $\text{AgGe}_{1.4}\text{As}_{0.6}\text{S}_3$ ($x=0.4$) with carbon nanotube content at a frequency of the alternating-current electric field varying from 1 Hz to 5 MHz and on direct current at ambient pressure and at pressure up to 30 GPa are presented. The ion transport was confirmed by means DC measurements in cells with blocking ion component of conductivity electrodes. An evaluation of the proportion of ionic conductivity can make a preliminary conclusion that the ionic component of the conductivity of at least 98%. Analyze of the baric dependences of AC properties have shown that the dielectric loss tangent and the real part of an admittance of the $\text{AgGe}_{1.4}\text{As}_{0.6}\text{S}_3$ with carbon nanotube content compound exponentially increase with a pressure increase from 1 up to 30 GPa.

[1] R. Waser and M. Aono, Nature Mater. 6, 833, 2007.

¹The study was supported in part by the Ural Federal University development program with the financial support of young scientists; and by the Russian Foundation for Basic Research, project No. 12-02-31607.

Kirill Kurochka
UrFU

Date submitted: 19 Feb 2013

Electronic form version 1.4