

Ionic Conductivity Of Semiconductor Ceramics AgGeAsS₃ at Super High Pressures 15GPa-50GPa

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The ionic semiconductor AgGeAsS₃ was synthesized in amorphous and polycrystalline forms [1]-[5] and at temperatures 273K has practically 100% ionic conductivity with Ag ions as transport agent. We researched now the influence of static pressure on electrical characteristic of this sample at temperature 300K. The super pressure was created by means of camera plane-cones type made of synthetic carbonado-diamonds with pressure to 50GPa. Electrical conductivity was researched by method of impedance spectroscopy for frequencies 100-10⁵ Hz. The godographs of impedance at the pressures of 15GPa, 20GPa, 25GPa, 28GPa, 30GPa were got and researched the dependencies of conductivity at frequencies in a sample. Ware investigated hysteresis of conductivity when the pressure was decreased. The role of binding sample/electrode at different pressures was analyzed. We found that at the pressure 37.1GPa the sample was decomposed with appearing of a new phase which is analyzed now. It was shown the appearing of electronic conductivity and its increasing with the pressure increasing, along with decreasing of ionic component of full current.

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