

Microstructure, melting behavior and thermal conductivities of three Bi–Ag alloys with 5, 20 and 45 mass% of Ag were experimentally studied in the present work. Phase morphology of the alloys was analyzed by the light microscopy and scanning electron microscopy with energy-dispersive X-ray spectrometry. Phase transition temperatures and their heat effects were measured using differential scanning calorimetry (DSC). The calculation of phase diagrams method was used for the computation of thermodynamic functions such as enthalpy and specific heat capacity of the investigated alloys. Experimentally obtained DSC heating scans were compared with the simulated DSC scans derived from thermodynamic data, and good mutual agreement was noticed. The flash method was used for determination of thermal diffusivity and thermal conductivity of the investigated alloys. It was found that increase in silver content to 45 mass% resulted in modest increase in thermal conductivity of the investigated alloys. Thermal conductivities for all three investigated eutectic alloys slightly decrease with increasing temperature