

Microstructure, phase transitions and thermal properties including thermal diffusivity and thermal conductivity of four Ag–Ge alloys with 20, 40, 60 and 80 at % of Ge were experimentally investigated in this study. Observation and analysis of the alloy microstructures and morphologies of (Ge) phase in the hypereutectic alloys were carried out using optical microscopy and scanning electron microscopy with energy-dispersive X-ray spectrometry (SEM–EDS). Phase transitions of the alloys were studied using differential scanning calorimetry (DSC). Experimentally determined temperature of the eutectic reaction was 650.9 °C. The xenon flash method was used for thermal diffusivity measurements in the temperature range from 25 to 400 °C. Based on the measured values of thermal diffusivity, thermal conductivity of the solid Ag–Ge alloys was determined. It was found that both thermal diffusivity and thermal conductivity show a minimum at 20 at % Ge which is close to the eutectic composition. The obtained results were compared with the results of thermodynamic calculation and literature data, and a close agreement was observed.