

In the current study the ternary Ga-Ge-Zn system was experimentally and analytically tested. The ternary system is chosen due to the importance of germanium-based alloys in the electronic industry and their special application as memory materials. There are no previous studies related to the Ga-Ge-Zn system up to this paper. Used experimental techniques were differential thermal analysis, scanning electron microscopy with energy dispersive spectrometry, x-ray powder diffraction, electrical conductivity and hardness tests. The experimentally obtained results were compared with the results of thermodynamic calculation of phase equilibria using the calculation of phase diagram (CALPHAD) method and literature data. Calculated phase diagrams were three vertical sections (Ga-GeZn, Ge-GaZn and Zn-GaGe), three isothermal sections (100, 200 and 300 °C) and liquidus projection with invariant reactions. Good agreements between calculated phase diagrams and experimental data have been obtained without introducing ternary thermodynamic parameters.