

Obtaining a Consistent Set of Thermodynamic Data: As an Example Ge-I and Ga-Cl Systems

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The thermodynamic simulation becomes more and more actual in the modern technology. But it takes the extended precision of thermodynamic characteristics. For obtaining reliable and trustworthy thermodynamic information in Institute of Inorganic Chemistry, Siberian Branch of Russian Academy of Sciences the universal method package was created that allow to determine the key thermodynamic characteristics of individual substances (formation enthalpies, absolute entropies and capacities) and also to study thermodynamics of phase transitions, homogeneous and heterogeneous equilibriums. Calorimetric methods are presented by low-temperature adiabatic calorimetry, solution calorimetry, drop calorimetry and differential scanning calorimetry. Tensimetric part of our package involves the flow method, Knudsen effusion method with mass spectrometric analysis of the composition of the gas phase, calibrated volume procedure and the static method with a quartz membrane zero manometer. All methods were tested on reference substances and provided with software tools for treatment experimental data. The description methods in detail and obtained sets of reliable thermodynamic data on In-I and Ge-I systems were published in [1-3]. The aim of this work is to get the consistent thermodynamic information on the properties of germanium bromides and gallium chlorides.

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- [2] Zelenina L.N et al *J. Chem. Thermodyn.* **35**, 1601-1612, (2003).
- [3] P.P. Semyannikov et al *Thermochimica Acta*, **432/1**, 91-98 (2005).