Thematic Section: Physicochemical Research. **Full Paper**
Subsection: Inorganic Chemistry. *Registration Code of Publication:* 14-37-3-27
Publication is available for discussion in the framework of the on-line Internet conference "*Butlerov readings*".
http://butlerov.com/readings/
Contributed: April 29, 2014.

The thermodynamic functions of monovalent thallium and silver halides dissolution processes in water and hydrohalic acids

© **Alexander S. Korsakov**, **Liya V. Zhukova**,*+ **Victor S. Korsakov**, **Dmitry D. Salimgareev**, **Alexander S. Shmyigalev**, and **Anastasiya A. Timina**
Department of Physical and Colloidal Chemistry. Ural Federal University named after the first President of Russia B.N.Yeltsin. Mira St., 28. Yekaterinburg, 620002.
Phone: +7 (343) 375-44-45. E-mail: l.v.zhukova@urfu.ru

*Supervising author; +Corresponding author

Keywords: *thallium(I) and silver halides, solubility, solubility product, solubility constant, thermodynamics and kinetics of the dissolution process, Gibbs free energy, enthalpy and entropy change, activation energy and dissolution rate constant.*

Abstract

The dissolution process of TlHal, AgHal and their solid solutions are discussed in terms of thermodynamic. The individual metal halides solubility products and binary solid solutions dissolution constants are calculated using experimental solubility data. The basic thermodynamic and kinetic parameters of TlHal and AgHal dissolution process in water and hydrobromic acid of different molality are determined at temperatures varying from 298 to 368 K. A method has been proposed for calculating the component solubility of solid solutions on the basis of poorly soluble metal halides.