Full Paper _____ *Thematic Section:* Research of the New Processes.
Reference Object Identifier – ROI: jbc-02/16-45-3-72 *Subsection:* Physical Inorganic Chemistry.
Publication is available for discussion in the framework of the on-line Internet conference "*Butlerov readings*".
http://butlerov.com/readings/
Submitted on May 02, 2016.

Thematic course: Chemical bath synthesis of metal chalcogenide films. Part 29.

Evaluation of formation conditious and synthesis of tin sulfide thin(II) films from solutions using thioacetamide and thiourea

© **Larisa N. Maskaeva**,[1,2+] **Stanislav S. Tulenin**,[1] **Anastasia A. Timina**,[1]
Anna I. Shemyakina,[1] and **Vyatcheslav F. Markov**[1,2*]

[1] *Physical and Colloid Chemistry department, Ural Federal University Named after the First President of Russia B.N. Yeltsin. Mira St., 19. Yekaterinburg, 620002. Sverdlovsk Region. Russia. Phone: +7 (343) 375-93-18. E-mail: mln@ural.ru*

[2] *Chemistry and Combustion Process Department. Ural State Fire Service Institute of Emergency Ministry of Russia. Mira St., 22. Yekaterinburg, 620022. Sverdlovsk Region. Russia. Phone: +7 (343) 360-81-68 E-mail: v.f.markov@urfu.ru*

*Supervising author; +Corresponding author

Keywords: tin sulfide(II), chemical bath deposition, thin films, education boundary conditions, scanning electron microscope investigation.

Abstract

The boundary conditions of formation of SnS and hydroxide including of crystallization factor 298 K were defined by calculation of ions equilibrium using thermodynamic constants in systems "tin chloride – ammonia – thiourea" and "tin chloride – tartaric acid – sodium citrate – thioacetamide". We demonstrated experimentally the possibility of chemical bath deposition of SnS thin films from these systems. Changes of film microstructure surface depending on temperature and the type of halogenizator were defined with scanning electron microscopy. Energy dispersive microanalysis shows nonstoichiometry of thin films on the sulfur content not exceeding 2.3 at.%.