Full Paper _____ *Thematic Section:* Physicochemical Research.
Registration Code of Publication: 13-36-10-98 *Subsection:* Inorganic Chemistry.
Publication is available for discussion in the framework of the on-line Internet conference "*Butlerov readings*".
http://butlerov.com/readings/
Contributed: September 11, 2013.

Theme: Physico-chemical studies of aluminum hydroxides. Part 1.

The effect of hydrargillite phase transitions on the mechanical properties of floccules

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Keywords: *hydrargillite, boehmite, aluminum oxide, floccule, phase transition.*

Abstract

The factors, which cause the decrease in the mechanical strength of hydrargillite floccules under heating from 250 ºC to 500 ºC in air, were investigated. The formation of two boehmite fractions with crystallites varying in size was detected. Turning hydrargillite into boehmite and χ-Al_2O_3 contributes to minimum decrease in floccule mechanical strength. Dehydration of boehmite into γ-Al_2O_3 leads to a considerable decrease in the mechanical strength of the floccules because of their shrinkage resulting from the displacement of γ-Al_2O_3 microblocks in the bulk of the crystal.