Analytical Review

Subsection: Chemistry of Silicon and its Compounds.

Reference Object Identifier - ROI: jbc-02/15-43-9-1 The article is published as a material of correspondence participation in International Scientific Forum "Butlerov Heritage-2015". http://foundation.butlerov.com/bh-2015/ (English Preprint) Submitted on April 21, 2015.

World market of amorphous silica consumption and Kamchatka hydrotherms as new raw resources for nanosilica production in Russia Federation

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Keywords: sols, silica nanopowders, industrial use of amorphous silica, hydrothermal solution.

Abstract

World demand for different types of amorphous silica is continuously increasing. This trend is evident in the high-tech industries, which are associated with the consumption of ultrafine silica forms, i.e. sols and nanopowders. Hydrothermal solutions are a new source of raw material for SiO₂ sols and nanopowders preparation. There is a need to develop technology for production of nanopowders and sols of SiO2 on the basis of hydrothermal solutions. The technology must take into account the size and concentration of SiO_2 particles, the kinetics of their formation as a result of the polycondensation of orthosilicic acid, the temperature and pH of the aqueous medium.