DEPENDENCE OF ALUMINUM OXIDE SORPTION PROPERTIES ON DEPOSITION PH VALUE AND COHERENT SCATTERING REGION SIZES

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The authors synthesized samples of aluminum hydroxide by the method of controlled two-jet precipitation under various conditions, followed by thermal decomposition to aluminum oxides. Correlation between values of sorption capacity, pH and CSR values was observed.

Aluminum oxide is a readily available mechanically strong and hydrolytically stable sorbent [1]. It is widely used in the defluorination of industrial wastewater and groundwater. One of the suitable synthesis methods for the ability to control the characteristics of aluminum oxide is the method of controlled two-jet deposition [2]. Features of the method of controlled two-stream deposition allow to influence the properties of the final product and obtain oxides with the required characteristics. One of the adjustable precipitation parameters is the pH value.

The synthesis of samples was carried out as follows: a solution of an aluminum nitrate salt and a solution of ammonia was fed in a drop mode so that the pH during the deposition was constant. The adjustable precipitation parameters were the pH value.

The sorption properties of the samples were investigated by the potentiometric method. As a result of the experiments, the following correlation is observed and is presented in Fig.1: with an increase in the pH of the precipitation, an increase in the CSR values and a decrease in the sorption capacity are observed.

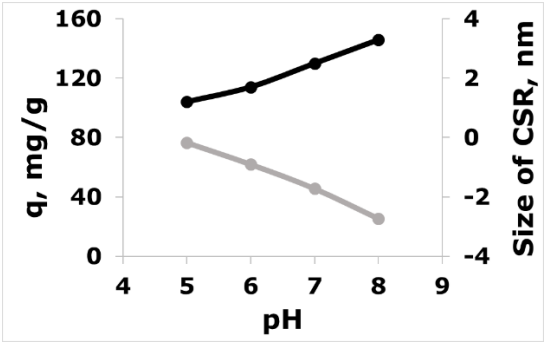

Fig. 1. Correlation between values of sorption capacity, pH and CSR values

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2. V.A. Dzisko and A.S. Ivanova, The main meth. for prod. Act. Alum. Ox., (SO AN USSR, 1985), M215, 110.