

The mechanism of structural formation of oxyhydrate gel nanoclusters at rheological study

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Abstract

The paper describes the structural formation of the gel zirconium oxyhydrate during rheological studies. There are presented and analyzed the experimental data (change of instantaneous dynamic viscosity) and calculated frequency viscosity, which suggest that during evolution of oxyhydrate gel there occur periodic structural changes of the colloidal system at the expense of periodic processes of polymerization-destruction, hydration-dehydration.

Basing on the experimental data and calculations we came to the conclusion that in the system of coaxial cylinders under the shear stress the formation of sandwich-structures "water-polymer-water" takes place.

The rheological method for observing the changes of viscosity characteristics of gel systems using the device *Rheotest-2* is a kind of phase digital molecular-power microscope, allowing to show the cluster structure of oxyhydrates in the course of their evolution.