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Spike burst of nanocurrent in colloid-chemical systems, such as the possibility of creating a nanogenerator of electric current

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Abstract

It is shown that in oxyhydrate systems at their recombination polymerization the reactions can not be two-particle, but must react with each other at least as three particles. In this case the third particle, nanoclusters according to our terminology, catalyze the process of stochastic energy dissipation due to dissociative detachment of mobile nanoclasters from energy-wise metastable macromolecules. Thus the spike splash of nanoclusters is realized, which is determined by the periodic structural transformation of the diffuse electric double layer.

In the course of evolution oxyhydrate gels of zirconium, tin and other oxyhydrates undergo several structural changes that cause the change of intensity of ion-cluster flows acting in the oxyhydrate. Such nano-cluster flows are discharged on graphite eletrodes, generating electric current in the form of heterogeneous thin films.

Nevertheless, the physical and chemical complexity of the current spike splashes of the diffuse electric double layer of oxyhydrates of d-and f-elements, however, is similar to the physical model with an oscillating nanoconsole and is also capable of feeding electrically, for example, miniature sensors of various medical devices, chips for different systems of communication, but allows more technologically easy implementation of the given idea in manufacturing electrochemical cell that is in the real instrument.