

Specificity of adsorption of water vapor and nitrogen on cellulose

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Abstract

On the basis of comparative calculations of molecular-kinetic parameters of water adsorptives (at 298K) and nitrogen (at 77K), it was found that the higher the diffusion and adsorption capacity belongs to water molecules. The role of the dipole structure of these molecules in the interaction with the active centers of cellulose creating the inhomogeneous electric field in its pores has been discussed. The influence of the temperature of the adsorbent-adsorbate system on the efficiency of sorption processes in micropores, dominant in the oven-dry pulp has been analyzed. ¹H NMR identified the development of the porous system in the process of water adsorption. It is shown that the method of low-temperature nitrogen adsorption on cellulose gives very limited information about its structure and adsorption properties.