REMOVAL OF PHENOLS FROM WATER BY USE OF LAYERED DOUBLE HYDROXIDES

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This work is devoted to studies of processes of sorption of phenols by synthetic clay minerals of different composition. Solving the problem of preventing contamination of the environment depends on the successful solution of the problem of industrial wastewater from pollutants, especially from phenols. Therefore becomes more urgent problem of pollution of natural waters, the growth in waste water and the search for effective methods of cleaning them. The purpose of work is the search for new anionic sorbents. The application of this sorbent would allow to effectively remove of phenols from wastewater. The most promising sorbents are sorbents based on double hydroxides of metals with the structure hydrotalcite. They are cheap, accessible and effective, universal sorbents, and they have a high absorption capacity, resistance to environmental stress and can serve as excellent carriers for fixing on the surface of various compounds with their modification. The using of clay minerals with 2:1 structure type the changing value of the basal interlayered distances are very effective. Water molecules, as well as the positive and negative ions can be adsorb in interlayer space of these minerals. Therefore it is possible to place large ions between layers and forming columns. So we can create a system of pores where various small molecules can be placed. The pores size resulting in the intercalation process are about several tenths of nanometers. The samples were synthesized with the following ratios of cations in the matrix. The specific surface of LDHs was determined by low-temperature nitrogen adsorption chromatographic method with subsequent processing of the results obtained by BET method. The change of interlayer distance in LDHs after the adsorption of phenol, were investigated. Adsorption capacity of the obtained sorbents was investigated in the reaction of phenols with LDHs different composition of general formula MgxAly(OH)z with varying degrees of isomorphous substitution. During the adsorption the amount of adsorbed phenol from the aqueous phase were fixed. The kinetic parameters of ion-exchange were studied.

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