ORGANOCLAY'S DEVELOPMENT FOR INTRODUCTION INTO THE POLYMERIC MATRIX

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The introduction of nanoclays into solutions and melts of polymers with the production of nanocomposites with enhanced mechanical properties has recently become widespread. [1-3]. Today Tagan bentonite has the greatest interest in terms of technology and its processing. [4]. The peculiarity of the layered structure of the Tagan bentonite is that this type of clay consists mainly of montmorillonite (95%) and also swells quite well in water, which makes it possible to study it in the processes of intercalation and exfoliation. Thus obtained nanoclays have a line of properties of the original clays, which opens up great prospects for their use in nanotechnology. Such organoclays can be used in various areas, i.e., as a composite in construction, in medicine and cosmetics, and also as fillers for polymeric medium or organically medium.

In this work, we studied the possibilities of obtaining hydrophobic montmorillonite clays by intercalating the sodium form of super hydrophobic surfactants into Tagan bentonite, controlling this process by measuring the contact angle and other various methods. Super hydrophobic clays were synthesized by exfoliating octadecylamine (ODA) into clay matrix, and the wetting angle of clays with water is ~150^0. X-ray analysis confirmed the fact of intercalation. The possibility of hydrophobic modification of clay layers using Tetrakis (decyl) ammonium bromide (TKAB) is also described.

The modification consists in stirring the mixture of clay slurry with a surfactant solution for 10 hours at a temperature of 60-80^o C. The concentration of surfactant should be higher than its CMC. Then the clay is separated from the solution, washed and dried. Drying temperature should be in the range of 50-100^oC. By controlling the surface charge of clay particles, it can judge the intercalation of surfactant molecules into the interpacket space of montmorillonite.

Electrokinetical potentials of organoclays are determined using Zetasizer Q500.

Thermogravimetric analysis of organoclays was performed in the temperature range from 50° C to 600° C в Pyris 1 TGA, equipped with a high-temperature furnace. Scan speed was 10°C/min. The distribution of montmorillonite particles is determined by Zetasizer Q500. The magnitude of the wetting angle measured on the device Goniometer LK-1 [5].

Of great importance here are solids with a high hydrophobicity of the surface. Hydrophobization of clay is interesting because it expands the possibilities of their use. These surfaces are necessary, above all, to create a variety of "smart" devices. They are capable of self-purification from pollution. Such bodies are widely used in solar batteries, in the manufacture of paints, exterior architectural glass and "green" houses, as well as in the heat-conducting surfaces of air conditioners.

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