



A STUDY OF MATERIAL BASED CLAY: « POLYETHYLENE LOW DENSITE-CLAY »

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The nanocomposites with clay currently occupy a very important class in the research of new materials. In this context is that our study was to develop a nanomaterial polyethylene and a organic clay prepared by mixing in the molten state.

A cationic surfactant hexadecyltrimethylammonium bromide (HDAB) was utilized in order to render the "Maghnite" a montmorillonite sheet silicate clay from Algeria organophilic. Organophilic montmorillonite MMT-Org was prepared by ion exchange between Na⁺ ions in the Maghnite and HDAB cations in aqueous medium. The results of X-ray diffraction analysis and fourrier transform infrared spectroscopy form the MMT-Org indicate clearly the increase of the interlayer spacing by intercalation of ions alkylammonium. During this study thermogravimetric analysis TGA is used to obtain information on the thermal stability (decomposition temperature) of organic modifiers(HDAB).

From the Polyethylene-clay nanocomposite, the improvement of the mechanical properties(rigidity, hardness,.....) is related to the incorporation of the montmorillonites organophilic. Thus, the quality of the dispersion of montmorillonite at the nanometer scale is not alone responsible for the mechanical properties. The state of dispersion resulting from interaction between the clay and the polymer is a key factor in the final properties of the nanocomposite.