

This research concerns the characterization of the mechanical behavior of composite materials reinforced with different percentage of short natural fibers Alfa chemically treated and untreated in the polymer matrix Polypropylene (PP). Adherence at the fiber/matrix interface (hydrophilic / hydrophobic) was studied. The various means and implementation techniques used in this study are: crushing, alkali treatment, extrusion and injection. The experimental tests such as static tension, charge-discharge, have given a significant number of physicochemical information of the composite material, which allowed us to compare with other composite materials. This process has generated a referenced database that can be useful for others composites from the same family of composites based on natural fibers. Thus, damage mechanisms were identified by mechanical tests and observations with scanning electron microscope (SEM). The acoustic emission (AE) is used to detect the damage. Through this technique can be evaluate the quality and importance of the fiber/matrix interface with optimization of chemical treatment and reduce of bundles fibers diameters that are a fundamental technique for this study and has given greater improvements in mechanical properties composites. Several experimental tests were performed on three types studied in static materials, allowed to better understand the fatigue behavior of the material. The Mori-Tanaka model was used to validate the experimental results. The elastic behaviors have been studied with the aim of determining different intrinsic mechanical properties of the material