

## ***Poster 7***

# **Preparation of Styrene/Clay Nanocomposites by Miniemulsion Polymerization**

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Over the past few years, a large number of studies have addressed the synthesis of nanocomposites using layered silicates as fillers. This interest arises from the improved thermal, physical and mechanical properties of these materials. The property enhancement comes from the interaction polymer-charge, and that in order to have an effect improvement in properties, it is necessary to develop a large interfacial surface area to maximize the interaction. Recently, special interest has been paid to the formation of nanocomposites of this kind by encapsulation of clays. Among the more versatile and environmentally friendly methods of encapsulation are emulsion and miniemulsion polymerization. However, given the hydrophilic characteristic of clays, one of the principal problems in the encapsulation is to obtain a stable dispersion monomer-clay.

In this work, we report preliminary results concerning the organic dispersion of modified Laponite and its use in the synthesis of styrene/clay nanocomposites via miniemulsion polymerization. The synthesis process consists of the following steps: (i) organic modification of Laponite, (ii) organic dispersion of modified Laponite, (iii) formation of nanodroplets and (iv) polymerization. The organic modification was carried out using cetyltrimethylammonium bromide (CTAB) and didodecyldimethylammonium bromide (DIDO) by cation exchange. Experimental results show that Laponite is better dispersed in the organic phase when DIDO is used because of its higher hydrophobicity. In both cases, stable nanocomposite latexes with high conversion were obtained.