

## Synthesis of PVC – Montmorillonite Nanocomposite via In – Situ Miniemulsion Polymerization

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Over the past decade, a large number of studies have addressed the synthesis of nanocomposites using layered silicates as filler. This interest arises from the greatly improved thermal, physical and mechanical properties of these materials. The property enhancement comes from the interactions between polymer – layered silicates. In order to have an effect improvement in properties, layered silicates must be exfoliated in the polymer matrix. There are several processes were developed to disperse the layered silicates in polymer such as melt blending, solution blending and in-situ polymerization. Among of them, in – situ polymerization is the best method to make exfoliated nanocomposite.

In our experiments, the PVC – Montmorillonite (MMT) nanocomposites were synthesized by in – situ miniemulsion polymerization. The properties of PVC–MMT nanocomposites were characterized by X – ray diffraction, TEM and TGA. The X – ray diffraction and TEM results showed that the layered silicates were exfoliated in the PVC matrix. The degree of exfoliation depends on MMT loading and swelling time of MMT in the monomer phase. The best exfoliation was obtained when MMT loading less than 5% wt.