The mechanism of exfoliation with hydrophobic end functionalized polymer

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The PU nanocomposites at high concentration of clay were formed by two step process. First, the organoclay was dispersed in HTPB at 5%, 10% and 15% of inorganic silicate base with high shearing at 2000rpm. Organoclay was exfoliated and intercalated. Secondly, as linking the HTPB/organoclay nanocomposite with IPDI, the organoclay were more exfoliated and it was revealed in XRD, SAXS and TEM because the crosslinked hydrophobic chain enabled elastic forces pushed out the silicate layers. The tensile strength continuously enhanced in tensile test was until 10% of clay loading, but thermal barrier properties were similar.