

Abstract Submitted
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On the Crystallinity and Chain Conformation in PEO / Layered Silicate Nanocomposites SPIROS H. ANASTASIADIS¹, K. CHRISOPOULOU, S. BOLLAS, Foundation for Research and Technology - Hellas, Heraklion Crete, Greece, K. ANDRIKOPOULOS, S. FOTIADOU, D. CHRISTOFILOS, Aristotle University of Thessaloniki, Thessaloniki, Greece, G.A. VOYIATZIS, Institute of Chemical Engineering and High Temperature Chemical Processes, Patras, Greece — The structure of nanohybrid materials as well as the chain conformation under confinement is investigated in hydrophilic polymer / layered silicate nanocomposites. A series of PEO / sodium montmorillonite hybrids was synthesized utilizing melt intercalation with compositions covering the whole range from pure polymer to pure clay. Intercalated nanocomposites with mono- and bi-layers of PEO chains are obtained in all cases. The intercalated chains as well as the ones adsorbed on the outer surface of the clay particles remain purely amorphous; nevertheless, their conformations exhibit different characteristics from those of the amorphous bulk material with the intercalated PEO chains adopting preferably gauche conformations. It is only for compositions where a large amount of excess polymer exists outside the completely full galleries that the polymer crystallinity is recovered. Sponsored by NATO's Scientific Affairs Division, by the Greek GSRT and by the EU.

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