



THE ROLE OF THE CALY IN MORPHOLOGY MODIFICATION OF THE UNCOMPATIBLE POLYMER BLENDS

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The multiphase polymer based systems represent a large and rapidly growing fraction of the plastics produced and their microstructural control and opportune choice of the constituents lead to the formulation with enhanced performances. Beyond, by nano-filler loading into the multiphase polymer based systems, the morphology and the properties can be significantly modified and improved. The presence of organo-modified montmorillonite in incompatible polyethylene/polyamide systems leads to a notable morphology modification, in particular, the formation of a specific co-continuous morphology is possible. The microstructural blend analysis suggest that the OMMt loading plays a role of a physical compatibilizer for the incompatible HDPE/PA blends and for a some specific composition, i.e. HDPE/PA/OMMt = (75/25)/5 % wt, the formation of continuous polyamide phase into the polyethylene phase can be obtained. In the solid state, the OMMt nanoparticle are disposed predominantly into the polyamide phase because its more polar than the polyethylene, and, both the reinforcement effect and the co-continuous microstructure promote the enhancement of the system rigidity. The nanoparticle loading to incompatible polymer blends allows tailoring the final properties and it leads to the formulation of high-performance materials.