|  |  |  |  |
| --- | --- | --- | --- |
| **Título** | **Materiales** | **Resumen** | **Resultados** |
| Effects of organoclay modifiers on the flammability, thermal and mechanical properties of polycarbonate nanocomposites filled with a phosphate and  organoclays | bisphenol A polycarbonate  bis(diphenyl phosphate) (BDP)  Organoclays were montmorillonites modified by a cation-exchanged procedure with different kinds of quaternary ammonium surfactants | Polycarbonate was melt blended with solid bisphenol A bis(diphenyl phosphate), and a series of organoclays. All the  nanocomposites exhibit an intercalated-exfoliated morphology, they vary in the magnitude of intercalation. Mechanical properties are controlled by both the morphology and the affinity of the organoclays with the matrix.  After adding 6 wt. %  S-BDP and 0.4 wt. % PTFE, a marginal increase of tensile strength  however a decrease of Young’s modulus and elongation at break  can be observed. In the case of nanocomposites, both tensile  strength and Yong’s modulus are prominently increased compared  with neat PC and PC/S-BDP. | An additional silane within the organoclays would make the organoclays more compatible with the matrix but be a steric obstacle to the intercalation of the matrix chains.  The modifier bearing two long alkyl tails shows stronger affinity with the matrix  than the one bearing a single tail, but it would hinder the intercalation due to the steric effect  When additionally modified with a silane, the clays would be expected to be more hydrophobic thereby more compatible with the matrix.  The modifier bearing hydroxyl moieties has stronger interactions with the matrix, thus the corresponding nanocomposite exhibits a better intercalated morphology, higher Tg, improved strength and modulus; on the other hand, the hydroxyl moieties would promote degradation of the matrix, thereby the nanocomposite shows a worse thermal stability and flame retardancy. Organoclays additionally modified with a silane are more compatible with the matrix, however the steric effect of the silane would hinder the intercalation of the polymer chains resulting a smaller strength and modulus of the nanocomposites. Nevertheless, flammability of the nanocomposite is further reduced because of the flame retardant effect of the silane. Compared to the modifier bearing a single long alkyl tail, the one bearing two tails also shows stronger affinity with the matrix but a less intercalated morphology due to the steric effect. |
| Polycarbonate nanocomposites. Part 1. Effect of organoclay structure on  morphology and properties | Polycarbonate nanocomposites were prepared by melt processing from a series of organoclays based on sodium montmorillonite  exchanged with various amine surfactants. | To explore the effects of matrix molecular weight on dispersion, an organoclay was melt-mixed  with a medium molecular weight polycarbonate (MMW-PC) and a high molecular weight polycarbonate (HMW-PC) using a twin screw  extruder. The effects of surfactant chemical structure on the morphology and physical properties were explored for nanocomposites formed  from HMW-PC. | The modulus enhancement is greater for nanocomposites formed from HMW-PC than  MMW-PC. This trend is attributed to the higher shear stress generated during melt processing. A surfactant having both polyoxyethylene and  octadecyl tails shows the most significant improvement in modulus with some of the clay platelets fully exfoliated. However, the  nanocomposites formed from a range of other organoclays contained both intercalated tactoids and collapsed clay particles with few, if any,  exfoliated platelets.    Evaluar el bis(polyoxyethylen)methyl octadecil amonio |
| Preparation of Highly Exfoliated and Transparent  Polycarbonate/Clay Nanocomposites by Melt Blending of  Polycarbonate and Poly(methyl methacrylate)/Clay  Nanocomposites | In this report, we introduce an industrially  feasible method that involves melt blending of polycarbonate  (PC) and in situ suspension polymerized exfoliated  PMMA/clay (Na  MMT) nanocomposites to prepare  highly exfoliated PC/clay nanocomposites. | The rational behind this is that PC is well known to form miscible blend with low molecular weight PMMA. Thus, low molecular weight PMMA/clay exfoliated nanocomposites were prepared by suspension polymerization using preexfoliated clay (Na MMT) in water media during the polymerization. The (80/20 w/w) PC/PMMA blends without and with Na MMT showed single glass transition  temperature (Tg), indicating complete miscibility of the polymers in the blend. | The properties of the (80/20 w/w)  PC/PMMA-Na MMT nanocomposites were significantly  higher than that of the pure PC. Moreover, retention of the  optical transparency of PC in the nanocomposites could be  due to the presence of unmodified clay (NanMMT), which  did not contain any organic modifier (quaternary ammonium  salt) that could decompose during melt mixing of PC  at high temperature (\_280\_C). |
| Polycarbonate nanocomposites: Part 2. Degradation and color formation | Polycarbonate nanocomposites were prepared using two different twin screw extruders from a series of organoclays based on sodium  montmorillonite, with somewhat high iron content, exchanged with various amine surfactants. |  | Molecular weight degradation of the PC matrix during melt processing produces  phenolic end groups which were tracked by UV–Vis spectroscopy. Greater dispersion of the clay generally led to higher reduction in  molecular weight due to the increased surface area of clay exposed  Some organoclays produce less color formation in PC nanocomposites than montmorillonite probably due to lower content of iron |
| Morphology and mechanical properties of bisphenol A polycarbonate/poly  (styrene-co-acrylonitrile) blends based clay nanocomposites | Two organic modified clays (Cloisite\_30B (CL30B) and PCL/Cloisite\_30B masterbatch (MB30B)) were used  to improve the mechanical properties of polycarbonate (PC)/poly (styrene-co-acrylonitrile) (SAN) blends. |  | The mechanical properties of the clays filled nanocomposites  vary accordingly and when MB30B is used better mechanical properties can be achieved. Tensile  strength increases 41% at maximum as the CL30B loading is 5 wt.%, while elongation at break decreases  dramatically. Impact strength can be improved up to 430% compared to the pure blend when 1 wt.%  MB30B was used. |
| Mechanical behaviour at large strain of polycarbonate nanocomposites during  uniaxial tensile test | polycarbonate used in this study is a poly(bisphenol Acarbonate)  supplied by Bayer under the trade mark Makrolon\_  AL2647  Two kinds of spherical nanoparticles were selected for this  study:  -AEROXIDE Alu C (Degussa). Alumina  -AEROSIL\_ A300 (Degussa). Silica | mechanical behaviour of polycarbonate nanocomposites reinforced by  alumina or silica nanoparticles at low levels of incorporation |  |