

Abstract

Nanocomposites of partially exfoliated structures, based on poly(ethyl methacrylate) (PEMA) were successfully prepared in dioxan at room temperature via in situ polymerization initiated by a Ni(II) α -benzoinoxime complex in presence of 1.5 by weight of an organically modified Algerian bentonite (OBT). Increasing OBT loading from 1.5 to 3% led to nanocomposites of mixed intercalated/exfoliated structures with randomly dispersed OBT stacks, of thickness varying between 17 and 34 nm. The structure of these nanocomposites was investigated by X-ray diffraction and transmission electron microscopy. The glass transition temperature of these nanocomposites increased by 4 °C compared to that of PEMA. Moreover, a thermogravimetry analysis confirmed a significant enhanced thermal stability of PEMA/OBT nanocomposites compared to virgin PEMA prepared under the same conditions. The apparent activation energies E_a of thermal degradation for PEMA/OBT nanocomposites, estimated using Tang's method were much higher than that of virgin PEMA and depended on OBT loadin