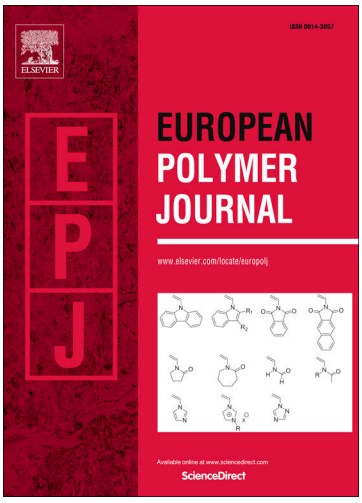

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Chain extender effect of 3-(4-hydroxyphenyl)propionic acid/layered double hydroxide in PBS bionanocomposites

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ABSTRACT. 3-(4-hydroxyphenyl)propionic acid (HPPA), a biobased hydroxy acid, has been used as organic modifier in Layered double hydroxides (LDHs) based on ZnAl and MgAl cations. PBS bionanocomposites have been prepared via *in situ* polymerization (with both types of clays) and melt blending (just with ZnAl-HPPA) obtaining completely green materials, potentially fully biodegradable. The filler loading is included within the range 1-10 wt%. The materials have been studied in terms of morphological, thermal and viscoelastic properties, resulting to have high thermal stability and huge mechanical reinforcement thanks to an excellent filler/polymer interfacial interaction highlighted by rheology experiments. HPPA, hosted by LDH, has a great chain extender effect toward the matrix. In particular, the melt blended samples, even if WAXD analysis evidence the formation of intercalated structures, show a tunable chain extender effect proportional to the composition and no gel-like structure has been produced. Moreover, LDHs, besides being bio and food compatibles, decrease the gas and