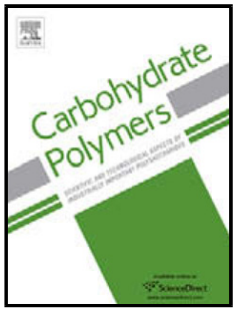

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The novel application of chitosan: effects of cross-linked chitosan on the fire performance of thermoplastic polyurethane

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Highlights

1. A novel flame retardant (ACS) has been synthesized by crosslinking of chitosan.

2. ACS can significantly improve the flame resistance of polyurethane composite.

3. The PU composite has good thermal stability and mechanical properties.

4. The decomposition temperature of ACS is more compatible with that of APP.

Abstract

In this paper, a novel flame retardant (ACS) was prepared by crosslinking chitosan with bis-(4-formylphenyl)-phenyl-phosphonate (ABPO). ACS in association with ammonium polyphosphate (APP) and organic modified montmorillonite (OMMT) were used to prepare flame retardant thermoplastic polyurethane (TPU) composite through melt blending. For the