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**Cationic poly(butylene succinate) copolyesters**

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**Abstract:** The synthesis, characterization and comparative evaluation of properties of two series of cationic PBS copolyesters bearing respectively ammonium and tributylphosphonium side groups, are reported. The copolyesters with contents in ionic units up to 50 mole-% as well as the fully ionic homopolyesters were prepared by polycondensation in the melt catalyzed by CALB or TBT. Their  $M_n$  ranged between 20,000 and 5,000 g·mol<sup>-1</sup> depending of composition and the type of ionic group that is involved. All the copolyesters were non-water soluble and showed good thermal stability. They were semicrystalline with melting temperatures and enthalpies decreasing with the ionic contents. The interactions interplayed by the ionic groups restricted largely the molecular mobility and caused a significant increase in the melt viscosity and glass transition temperature of PBS and a decrease in crystallization rate. Both ammonium and phosphonium containing PBS copolyesters were able to be coupled with sulfonated PBS to generate ionic polymer blends with modified crystallizability. The presence of both ammoniums and phosphoniums provided PBS with remarkable antimicrobial activity against gram-positive and gram-negative bacteria.

**Keywords:** Poly(butylene succinate), polyelectrolytes, cationic polyesters, enzymatic polymerization, ionic polymeric complexes, biocidal polyesters.

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