Synthesis and characterization of polylactide functionalized polyacetylenes.

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Streszczenie

The paper deals with the synthesis and polymerization of novel poly(l-lactide)-derived acetylene monomers and the analysis of the thermal properties of the formed graft copolymers. Poly(l-lactide) macromonomers with different acetylene end groups were prepared using stannous octanoate as a catalyst in the presence of various hydroxyacetylenes. Next, the well-characterized macromonomers were subjected to polymerization using [{RhCl(nbd)}$_2$]/Et$_3$N and [RuCl$_2$(CH–*o*–OiPrC$_6$H$_4$)(IMesH$_2$)] to obtain graft copolymers. Investigation of these graft copolymers by GPC and NMR spectroscopy revealed the presence of some poly(l-lactide) formed as a side product during the ring opening polymerization of l-lactide. The thermal stability of the polymeric materials has been studied as a function of the polyacetylene backbone substituents and the length of poly(l-lactide) side chains. Introducing polyacetylene into polyester increased the polymer stability. The thermal degradation behavior of the synthesized materials depends on the length of poly(l-lactide) chains and also on l-lactide homopolymer impurities in the graft copolymers.

Słowa kluczowe

polyacetylene, polylactide, polymerization, ROP, ruthenium catalysts, rhodium initiator