Synthesis by ATRP of triblock copolymers with densely grafted styrenic end blocks from a polyisobutylene macroinitiator

A macroinitiator was prepared from a triblock copolymer of polyisobutylene (PIB) with end blocks of poly(p-methylstyrene) (P(p-MeS)) by bromination to obtain initiating bromomethyl groups for atom transfer radical polymerization (ATRP). Controlled polymerization of styrene and p-acetoxy styrene yields new triblock copolymer structures with densely grafted end blocks. Simultaneously, however, thermally initiated polymerizations can be observed by size exclusion chromatography (SEC) which were also controlled yielding low molecular weight polymers with narrow distributions. A tendency to crosslinking can be suppressed by selection of the polymerization conditions.