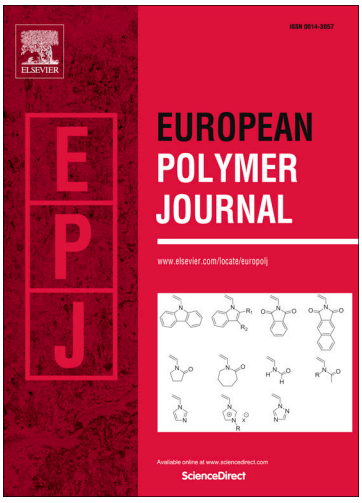

Antimicrobial surfaces obtained from blends of block copolymers synthesized by simultaneous atrp and click chemistry reactions

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ANTIMICROBIAL SURFACES OBTAINED FROM BLENDS OF BLOCK COPOLYMERS SYNTHESIZED BY SIMULTANEOUS ATRP AND CLICK CHEMISTRY REACTIONS

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ABSTRACT

A series of amphiphilic block copolymers based on styrene (S) and a monomer bearing both thiazole and triazole groups (MTA) were synthesized by combination of ATRP and click chemistry. In particular, two approaches were followed; the direct ATRP from a PS macroinitiator of the pre-synthesized MTA antimicrobial monomer; and the simultaneous synthesis and polymerization of the MTA through a one-step 'click chemistry'/ATRP process. Both strategies conduct to well-defined block copolymers with controlled molecular weight and low polydispersity. Subsequent quaternization of the thiazole and triazole groups of MTA units with butyl iodine renders systems with antimicrobial properties. Although these systems presented relatively low antimicrobial activity against bacteria and fungi in aqueous media, the preparation of surfaces functionalized with these copolymers leads to potent antimicrobial surfaces, especially against gram-positive bacteria.

Keywords: Block copolymers, ATRP, click chemistry, antimicrobial, surfaces.