

POLY(IONIC LIQUIDS) FUNCTIONAL STAINLESS STEEL SURFACES FOR ANTIBACTERIAL APPLICATION

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ABSTRACT

*Stainless steel (SS) is widely used in various fields from food processing, to health-related fields like medicine and dentistry. Biofilm is a problem in various fields where they cause biofouling of the SS surface, resulting in product contamination and economic losses. To enable SS surface with antibacterial functionality for inhibiting biofilm formation, poly(ionic liquid)s (PILs) brushes with poly 1-Vinyl-3-Octylimidazolium bromide were coated on SS surface via successive surface-initiated atom transfer radical polymerization of (3-mercaptopropyl) trimethoxysilane in this work. It has been shown that the PILs brushes coated SS surfaces exhibit significant antibacterial effects against Gram-negative *E. coli* as revealed using antibacterial assay. The PILs modified surfaces are potentially useful in fabricating steel-based equipment for various anti-microbial applications.*