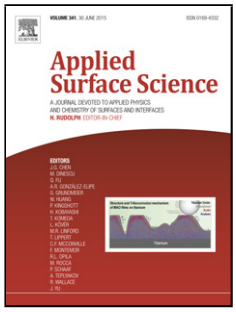

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Modification of Poly (L-lactic acid) Electrospun Fibers and Films with Poly (propylene imine) dendrimer

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ABSTRACT

Poly (L- lactic acid) (PLLA) electrospun fibers and films were modified with the second generation of poly (propylene imine) dendrimer (PPI-G_2) by three different approaches, namely, sodium hydroxide hydrolysis, plasma treatment and direct application of PPI-G_2. For the first and the second approaches, PLLA was modified by sodium hydroxide hydrolysis or plasma treatment to produce carboxylic acid groups. Then, the carboxylic acid groups were activated by 1-Ethyl-3-(3-dimethylaminopropyl) carbodiimide (EDAC) and N,N'-Dicyclohexyl carbodiimide (DCC) as a hetero bi-functional cross-linker. The cross-linkers promoted the grafting of carboxylic acid groups on the modified PLLA with NH_2 groups of PPI-G_2. In the third approach, the PPI-G_2 dendrimer was directly used as an aminolysis agent for the functionalization of PLLA in a one step process. FTIR analysis confirmed the presence of –NH_2 groups of PPI-G_2 on the

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