

Pet Bearing Bio-Based Moities

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Abstract : During the last few decades, great efforts have been made for the development of innovative materials using vegetal biomass. This strategy is understandable for different reasons including the predictable dwindling of the petrochemical feedstock and their price increase as well as the counterbalancing of the environmental problems. As novel bio-based monomers used in polyesters synthesis, two families, namely 1,4:3,6-dianhydrohexitols and furanics were prepared for saccharidic renewable resources. The present work deals with a detail investigation on the synthesis of poly(ethylene-co-isosorbide terephthalate-co-furoate) (PEITF) by melt polycondensation of dimethylterephthalate (DMT), 5,5'-isopropylidene-bis(ethyl 2-furoate) (DEF) ethan-1,2-diol (ED) and isosorbide (IS). Polycondensation was achieved in two steps: (i) the formation of a hydroxyethylterminated oligomer by reaction of starting diester mixture with excess ED and, (ii) a polycondensation step with elimination of ED was used to obtain high molar mass copolyesters. Copolymers of various compositions were synthesized and characterized by ¹H NMR, SEC, DSC and TGA. The resulting materials are amorphous polymers (T_g = 104-127 °C) with good thermal stability.

Keywords : bio-based monomers, furan, isosorbide, polycondensation

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