



PREPARATION OF NOVEL ACRYLIC ACID MODIFIED STYRENE BUTADIENE RUBBER /SEGMENTED POLYURETHANE USING IN BIOMEDICAL APPLICATION AND EVALUATION OF THEIR PROPERTIES AND COMPATIBILITY

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In this work, Acrylic Acid modified Styrene butadiene (SBR-g-AA)/segmented polyurethane (PU) blends were prepared. SBR has been modified using AA in the presence of benzoyl peroxide via bulk radical polymerization. Then ester-ether based polyurethane mixed with modified SBR using an internal mixer in various weight ratio of AA to SBR. Then blend of modified SBR/PU with weight ratio of 70/30 have been prepared and analytical techniques such as attenuated total reflectance infrared Fourier transform spectrometry (ATR-FTIR), dynamic mechanical thermal analysis (DMTA), tensile tests, Scanning electron microscopy (SEM), contact angle analysis and Water absorption were used to characterize the blend. ATR-FTIR and DMTA were used to confirm grafting of AA on SBR chains and then DMTA was used to qualitative analysis of grafting process. According to FTIR-ATR analysis, the peak at 1711 cm^{-1} band due to carbonyl groups of AA shifted to 1736 cm^{-1} in grafted SBR. DMTA results show change in AA percent caused to change in T_g of styrene blocks more than Butadiene blocks, therefore it could be concluded AA grafted to styrene blocks in SBR. Tensile and SEM Results show that ether-ester based PU is compatible with modified SBR. In fact, single amorphous phase consist of soft segment of the PU and modified SBR formed. The formation of this phase leads to compatibility of modified SBR/PU. PU has been distributed in SBR matrix caused to reinforcement and improvement physical and mechanical properties of SBR.