

Abstract Submitted
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Rheological and Mechanical Properties of Crosslinked Block Copolymer Nanofiber and Polystyrene Blends. SUNGWON MA, YONATHAN THIO, Georgia Institute of Technology — The mechanical and rheological properties of blends of crosslinked and uncrosslinked poly(styrene)-*b*-poly(isoprene) copolymer with commercially available polystyrene were studied. Cylindrical morphology of PS-*b*-PI copolymer was employed for generating nanofiber morphology. Cold vulcanization process using sulfur monochloride (S_2Cl_2) was used to preserve the morphology. Blends of uncrosslinked PS-*b*-PI copolymer with neat polystyrene were also prepared. Both blend samples were prepared by solvent casting method with the filler contents varying between 0.5 and 10 wt%. The mechanical and rheological properties were characterized and the microstructures of the fiber and the systems were imaged. The dynamic moduli (G' and G'') of the crosslinked system increased with increasing the fiber content compared to the uncrosslinked system. The results were compared to the rheological model by fitting to Cross-Williamson. This blend study indicated critical volume concentration of nanofiber between 5 and 10 wt% of nanofiber content.

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