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Effects of the Number of Hydrogen Bonds on Mechanical Properties of Block Copolymer-Based Supramolecular Elastomers ATSUSHI NORO, TAKATO KAJITA, YUSHU MATSUSHITA, Nagoya University — A series of polystyrene-b-[poly(butyl acrylate)-co-polyacrylamide]-b-polystyrene triblock copolymers with almost the same molecular weight but with various mole fractions of acrylamide units was prepared. Tensile tests revealed that the larger maximum tensile stress was attained when the triblock copolymer had the larger fraction of acrylamide units in a melt middle block. This is because the effective cross-link density in the sample is larger. But further increase of acrylamide units in the melt middle block caused decrease of the breaking elongation. This is because stress concentration at glassy domains by elongation easily occurs when the number of hydrogen bonds incorporated into the melt middle block is large.

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