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Green Manipulation of Microdomain Structures in Block Copolymer Thin Films using Density Fluctuating Supercritical Carbon Dioxide<sup>1</sup> PETER GIN, Materials Science and Engineering, Stony Brook University, MIT-SUNORI ASADA, Kurashiki Research Laboratories, Kuraray Co., Ltd, MAYA EN-DOH, Materials Science and Engineering, Stony Brook University, TADANORI KOGA, Chemical and Molecular Engineering Program, Materials Science and Engineering, Stony Brook University — Self-assembling block copolymers are now commonly utilized to obtain well-defined arrays of nanoscopic structures in polymer thin films. Here, we introduce the use of supercritical carbon dioxide  $(scCO_2)$  as an environmentally "green" alternative to typical external fields, i.e. high temperature annealing, used to enhance the ordering of the nano-arrays. Various  $scCO_2$  conditions, including the density fluctuation ridge where anomalous swelling behavior and miscibility can be witnessed in homopolymer thin films, were used for poly(styreneblock-butadiene-block-styrene) (SBS) triblock copolymer thin films. The surface structures of the SBS thin films were then investigated by using GISAXS and AFM. The details of this experiment will be discussed in the talk.

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