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Phase behavior of cross-linked block copolymers HYEOK HAHN, ENRIQUE GOMEZ, University of California, Berkeley, JAYAJIT DAS, ARUP CHAKRABORTY, NITASH BALSARA, University of California, Berkeley and Lawrence Berkeley National Laboratory, MARK ELLSWORTH, Tyco Electronics Corporation — To study the order-disorder transition in cross-linked copolymer melts we have selectively cross-linked the polyisoprene chains in poly (styrene-block-isoprene) copolymers using high energy radiation. The temperature during irradiation was controlled to allow cross-linking in the ordered or disordered state. We present the phase behavior of block copolymers with either cylindrical or lamellar morphologies before and after the gelation point and compare the results for samples below the gelation point with a mean-field theory based on a coarse grained free energy and the Random Phase Approximation.

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