Abstract Submitted
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Effect of chain architecture on the surface energy of block copolymer melts[1] MARK MATSEN, University of Reading — Careful experimental studies of ABA triblock copolymer melts by Khanna et al. [Macromolecules, **39**, 9346, 2006] have detected an entropic advantage of placing the A-rich domain next to a surface as opposed to the B-rich domain. This preference is also corroborated by a self-consistent field theory (SCFT) calculation. Their proposed explanation is that B blocks avoid the surface, because otherwise they would lose the entropy associated with bridging and looping. However, a more thorough investigation of the SCFT reveals that the preference is due to an entropic advantage of having the end segments of the A-rich domain next to a surface. Furthermore, we use a simple lattice-model argument to intuitively explain that the entropy due to bridging and looping becomes irrelevant when the contour length of the B block is much smaller than the width of the B-rich domain, which is the normal situation in triblock copolymer melts. Our new chain-end explanation could be tested experimentally by examining other architectures such as A_2B starblock copolymers.

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Mark Matsen
University of Reading

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