

Abstract Submitted
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Complex Ordering of Soft Spheres in Block Polymer Melts SANGWOO LEE¹, JINGWEN ZHANG², FRANK S. BATES³, Univ of Minn - Minneapolis — Hard sphere systems, such as low- z metallic elements and colloids, generally form densely packed crystalline states with BCC, FCC and HCP symmetry. In contrast, a certain self-assembling soft materials including block polymers, surfactants, and dendrimers have the capacity to order into more open crystalline structures. Recently, we have identified five discrete sphere-packing symmetries in poly(styrene-*b*-isoprene-*b*-styrene-*b*-ethylene oxide) (SISO) tetrablock terpolymers: BCC, Frank-Kasper σ -phase, dodecagonal quasicrystal (DQC), $Pm\bar{3}n(A15)$, and non-close-packed hexagonal (sHEX). Some of these packing symmetries have been documented in certain heavy metals and organic dendrimers, and interestingly Landau theory anticipated a similar set of non-close-packed symmetries more than three decades ago. This talk will draw analogies between the ordering of spheres in soft and hard materials.

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