

Abstract Submitted
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Novel structures and properties of bound polymer layers formed on planar substrates¹ TAD KOGA, NAISHENG JIANG, MANI SEN, LEVENT SENDOGDULAR, XIAOYU DI, JIAXUN WANG, ALEXANDER SAEBOE, MAYA ENDOH, Stony Brook University — By utilizing the approach proposed by Guiselin that combines prolonged thermal annealing and subsequent solvent leaching, we aim to reveal the inherent structures and properties of bound polymer layers (BPLs) formed onto planar substrates. In this presentation, we will first highlight the generality of two different nano-architectures of bound polymer chains regardless of surface-segment interactions, intramolecular architectures, and chain lengths: flattened chains that constitute the inner higher density region of the BPLs and loosely adsorbed polymer chains that form the outer bulk-like density region. Next, we will show the long-range effects associated with the “interphase” between the BPLs and free chains in the matrix play crucial roles in local structures and properties. Finally, we will show the unique properties of the flattened layer alone as “substrates” for polymer thin films.

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