

Abstract Submitted
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Additive-Driven Assembly of Well-Ordered Block Copolymer/Carbon nanotube Membranes FEYZA DUNDAR, YING LIN, JAMES WATKINS, Univ of Mass - Amherst — Single-walled carbon nanotubes (SWNTs) exhibit unique properties desirable for high-performance materials and devices. Large-scale assembly of SWNTs into densely aligned forms is important to future manufacturing. Despite progress in oriented synthesis through chemical vapor deposition, electrospinning and assembly methods including the Langmuir-Blodgett approaches, and external fields, the alignment of SWNTs, particularly within polymer composites remains a challenge. Herein, we describe an additive-driven assembly method[1,2] that exploits strong, selective H-bonding interactions between SWCNTs with a specific domain of block copolymers. For example, we demonstrate alignment of SWCNTs in a lamellar forming poly(styrene-*b*-2-vinylpyridine) (PS-*b*-P2VP) diblock copolymer. Several annealing techniques were assessed. Our method for SWCNTs alignment is straightforward, solution processable, readily scalable and amenable to roll-to-roll processing. REFERENCES: [1] Lin, Y.; Daga, V. K.; Anderson, E. R.; Gido, S. P.; Watkins, J. J. *J. Am. Chem. Soc.* 2011, 133, 6513 [2] Lin, Y.; Wei, Q.S.; Gang, Q.; Watkins, J. J. *Macromolecules*, 2012, 45, 8665

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