

Abstract Submitted
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Investigation of polymer single crystals templated by surface-modified carbon nanotubes¹ ERIC D. LAIRD, BING LI, WENDA WANG, CHRISTOPHER Y. LI, Drexel University — Carbon nanotubes (CNT) decorated with periodic polymer lamellae were introduced in 2005 and were termed “nano-hybrid shish kebabs” (NHSK). Growth of these polymer single crystals was observed to be sensitive to the chemistry of the CNT sidewall. In order to gain insight into CNT-assisted polymer crystal nucleation and growth, several model systems were investigated. Polyethylene (PE) and Nylon-6,6 were crystallized on CNT as described in previous work, using tubes with a range of surface modifications. Thermal analysis and microscopy study have shown that the crystallization behavior of polymers can be tailored by adjustment of the surface chemistry of CNTs. Model systems that developed into NHSK were deposited into films (e.g. NHSK paper). Contact angle measurements on these films helped to demonstrate that both the surface roughness and chemistry of the NHSK paper can be tuned by controlled NHSK growth. Superhydrophobic films have been successfully achieved.

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