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Nano hybrid shish-kebab: towards periodically functionalize carbon nanotubes[1] CHRISTOPHER LI, LINGYU LI, WENWEN CAI, STEPHEN KODJIE, KISHORE TENNETI, Department of Materials Science and Engineering, Drexel University, Philadelphia, PA 19104 — Both chemical and non-covalent wrapping methods have been used to functionalize carbon nanotubes (CNT). Periodical functionalization of CNT remains a challenging task and few works have been dedicated to this research field. We report a novel method of functionalizing CNT surface using controlled polymer crystallization. CNTs were periodically decorated with polymer lamellar crystals, resulting in "nano hybrid shish-kebabs" structure. The periodicity of the polymer lamellae varies from 20 - 70 nm. Both polyethylene and Nylon 6,6 have been successfully decorated on multi-walled as well as single-walled CNTs. This method opens a gateway to functionalizing CNTs in an ordered and controlled manner, an attractive research field that is yet to be explored. It also directly leads to the synthesis of the "ideal" polymer/CNT nanocomposites with controllable tube-to-tube distance.

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