

Abstract Submitted  
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**Self-assembly of helical tubules using a single-tailed surfactant.**

HEE-YOUNG LEE, SRINIVASA RAGHAVAN, University of Maryland — Hollow micro or nanotubules are an unusual type of self-assembled structure that can be formed in aqueous solution. Such structures could be useful in a variety of applications such as in controlled drug delivery and in electroactive composites. However, these structures are typically formed only by some unusual lipids (i.e., two-tailed amphiphiles) or certain peptides. Here we present a very simple and economical process to make stable tubules by using a single-tailed diacetylenic surfactant in conjunction with an alcohol. The formation of tubules as a function of solution composition and temperature are systematically investigated in this study. The tubules are visualized by optical microscopy, while their detailed structure is seen under TEM. We find that the tubules have helical markings, which is remarkable considering that the precursor molecules are achiral. Our results provide further evidence that molecular chirality is not essential to forming tubules; presumably, tubules can form from achiral molecules by a chiral symmetry-breaking process.

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