

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Lipid tubules Formed by Flow-Controlled Hydration JING YUAN, LINDA S. HIRST, Florida State Univ. — Self-assembled cylindrical tubules from lipid molecules have attracted considerable attention because of their interesting supramolecular structures and technological applications. Schnur et al. [1] reported the formation of tubular microstructures from a series of diacetylenic phospholipids after liposomes were cooled through their chain melting transition. After that, several methods have been developed to fabricate such unique microstructures mainly by means of deforming preformed Giant unilamellar vesicles. Here we present a simple strategy to construct lipid microtubules through a flow-controlled lipid hydration. Fluorescent microscopy and Confocal Laser Microscopy were used to visualize the formation and the structure of the lipid tubules. Tubules were found to develop following the direction of the dynamic flow with highly parallel alignment. At high flow speeds, partial cross-linking of the lipid tubules was observed. To demonstrate the generality of this method, different types of phospholipids, such as Phosphatidic Acid (PA), Phosphatidylserine (PS), Phosphatidylethanolamine (PE), and Phosphatidylglycerol (PG) were investigated.

[1] J.M. Schnur et al, Science, 264, 945 (1994).

Jing Yuan
Florida State Univ.

Date submitted: 22 Nov 2006

Electronic form version 1.4