

Weerawat Intaratat 2012: Helical Winding Characteristic of Lipid tubules Investigated by Circular Dichroism Spectroscopy. Master of Science (Physics), Major Field: Physics, Department of Physics. Thesis Advisor: Miss Nattaporn Chatthem, Ph.D. 43 pages.

The chiral phospholipids 1,2-bis-(10,12-tricosadiynoyl)-*sn*-glycero-3-phosphocholine (DC_{8,9}PC) can self assemble into cylindrical lipid tubules. The lipid tubules obtained were 0.6-0.8 μm in diameter and approximately 50 μm in length. Under controlled cooling process ribbons of lipid bilayer self assembled into tight helical structure forming hollow cylindrical nanotubules. We report their physical formation under controlled cooling with the helical pitches depending on the cooling rate. Their morphology was investigated by atomic force microscopy (AFM). We constructed Circular dichroism (CD) spectroscopy to investigate chirality of helical lipid tubules. The CD signal detected indicates the dependence on cooling rate of chirality, expressed through molar ellipticity. The result enables chirality control of lipid tubules during the self assembling process.

Student's signature

Thesis Advisor's signature