Supporting Information (SI)

Spontaneous Nematic Alignment of a Lipid Nanotube in Aqueous Solutions

Wuxiao Ding, Hiroyuki Minamikawa,* Naohiro Kameta, Momoyo Wada, Mitsutoshi Masuda, and Toshimi Shimizu

Nanosystem Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba Central 5, 1-1-1 Higashi, Tsukuba, Ibaraki 305-8565 Japan

* Tel: +81-29-861-9386; Fax: +81-29-861-4545. E-mail address: hiroyuki.minamikawa@aist.go.jp

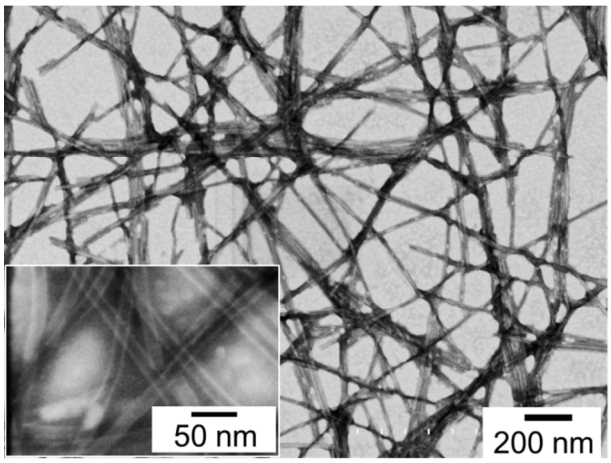

Figure S1. STEM images of the dried LNT on a carbon grid. The sample was heated on a hot plate for 10 min at 170 ºC. The staining and STEM observation were conducted at RT.

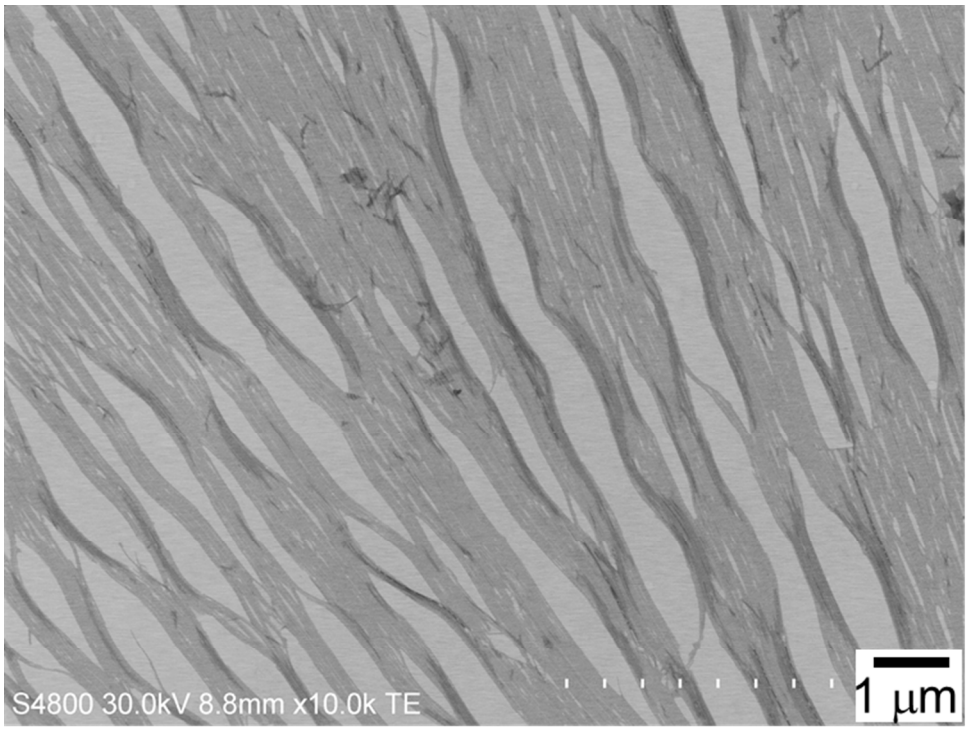

Figure S2. Low-magnification STEM image of the dried LNT from a 2-mg/mL dispersion on a carbon grid.

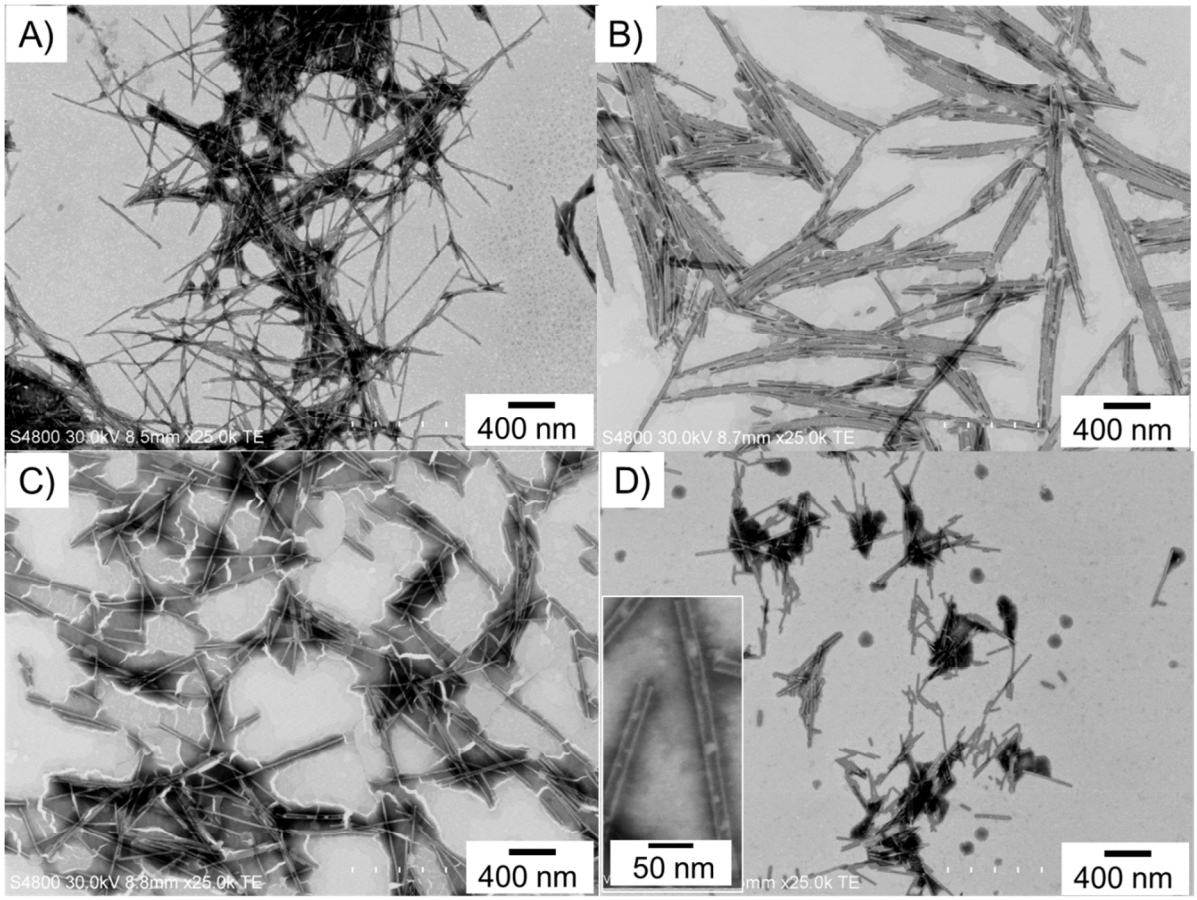

Figure S3. STEM images of sonication-treated LNT. The sonication duration times were A) 5 s, B) 10 s, C) 20 s, and D) 30 s.

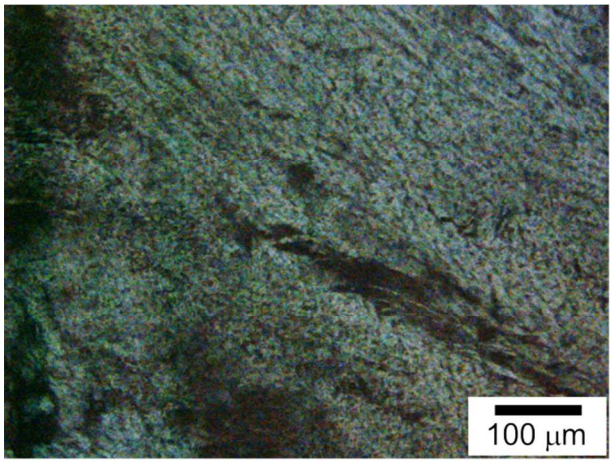

Figure S4. LC domain of a short LNT dispersion (10-s sonication treatment, 10 mg/mL). An aqueous sample on a glass slide was observed by polarized optical microscopy.

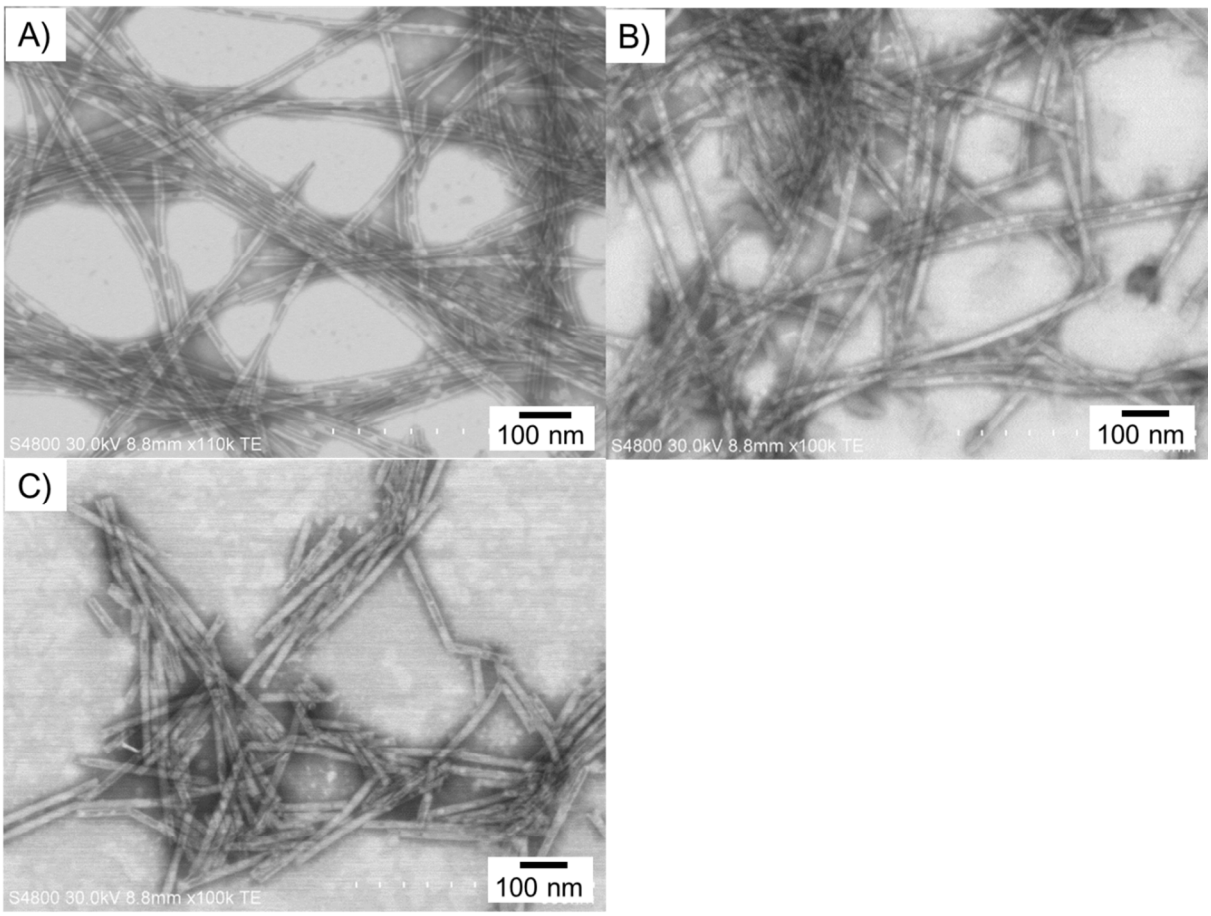

Figure S5: STEM images of LNTs in **A**) water/ethanol = 1/1 (v/v), **B**) water/acetone = 1/1 (v/v), **C**) water/tetrahydrofuran = 1/1 (v/v) at room temperature.

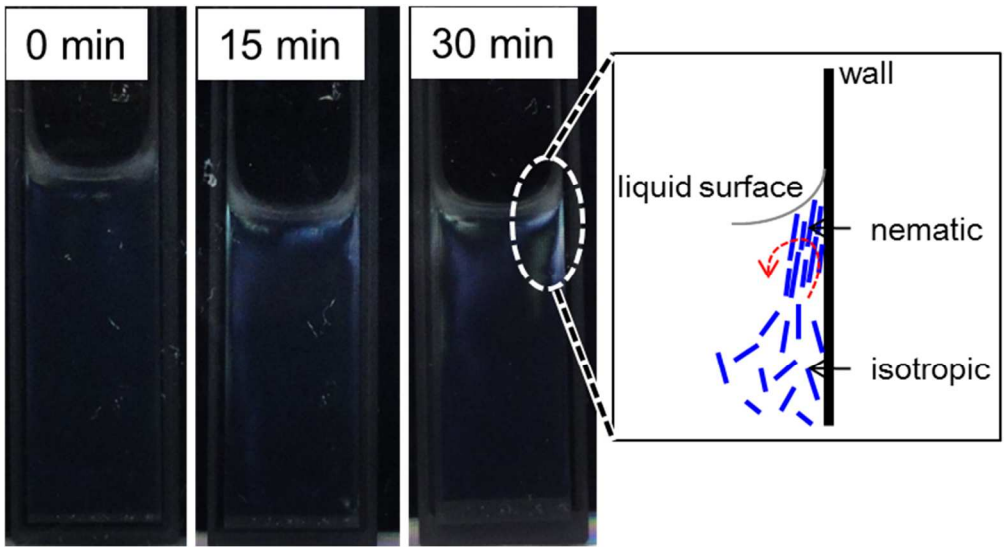

Figure S6: The phenomenon "tears of wine" of LNT in water/ethanol = 1/1 (v/v).The LNT was dispersed at 1 mg/mL (isotropic phase) in the mixture solvent. The dispersion was put into a cuvette and allowed for the evaporation of ethanol at room temperature for 15 min and 30 min. Photos were taken with crossed polarizers.

At 0 min, the LNT dispersion was isotropic. After 15 and 30 min a nematic phase appeared at the top of dispersion and near the cuvette wall (see the schematic image). This experiment suggested that LNT may be simply aligned by the evaporation process.