Supplementary Material (ESI) for Chemical Communications

Supporting Information

Preparation of organic nanoscrews from simple porphyrin derivatives

Hiroaki Ozawa,‡*[a] Hirofumi Tanaka,[b] Masahiro Kawao,[c] Shigeyasu Uno[a] and Kazuo Nakazato*[a]

[a] *Department of Electrical Engineering and Computer Science,Graduate School of Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan.*
[b]*Department of Chemistry, Graduate School of Science, Osaka University, 1-1 Machikaneyama, Toyonaka 560-0043, Japan.*
[c] *Research Center for Molecular–Scale Nanoscience, Institute for Molecular Science, 5-1 Higashiyama, Myodaiji, Okazaki, 444-8787, Japan.*
‡*Present address: Department of Applied Chemistry Kyushu University 744 Motooka, Nishi-ku, Fukuoka 819-0395, Japan.*

Materials and measurements

All reagents and solvents were of analytical grade and used without further purification. Optical microscopy and fluorescence microscopy were carried out by using an Olympus BXFM-33MB microscope and an Olympus BX51 microscope, respectively. A Hitachi S-4300 scanning electron microscope (SEM) and a JEOL JEM-3200FS transmission electron microscope (TEM) were also used in this study. UV-VIS absorption spectra and fluorescence spectra were recorded using a Shimadzu UV-2500PC double-beam spectrophotometer and a Shimadzu RF-5300PC spectrometer, respectively. The *I*–*V* characteristics of the samples were obtained by using an Advantest R6245 two-channel voltage–current source monitor interfaced to a microcomputer through a GPIB-SCSI board and NI-488.2 protocol. Data were acquired by a specially developed method and the IgorPro 4.0 software (Wavemetrics). The samples were mounted on the top of an antivibration table. All measurements were carried out under high vacuum ($P < 2.0 \times 10^{-4}$ Pa) generated by using a turbopump.

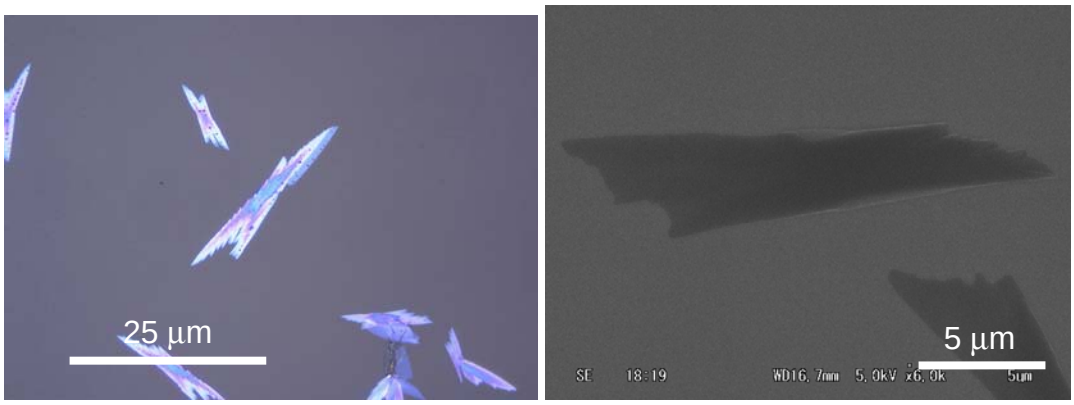


Fig. S1 (a) Optical microscope and (b) SEM images of supramolecular assemblies in 2-propanol.

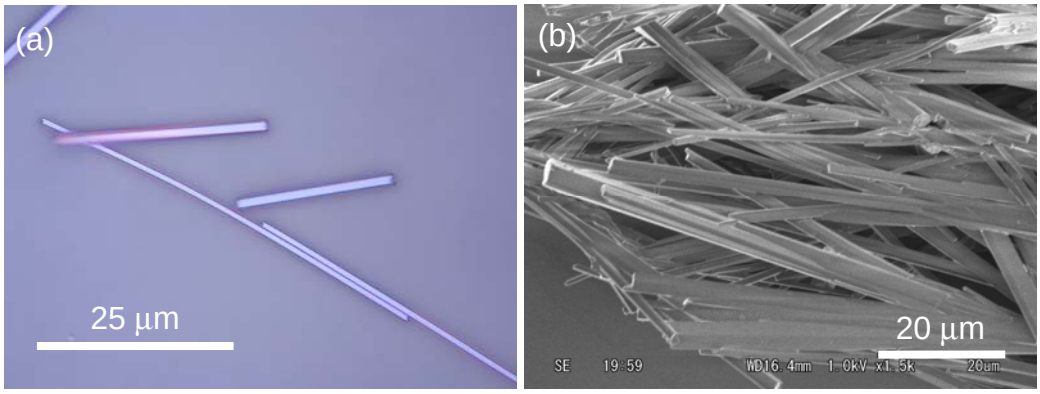


Fig. S2 (a) Optical microscope and (b) SEM images of supramolecular assemblies in 2-(2-(2-methoxyethoxy)ethoxy)ethanol.

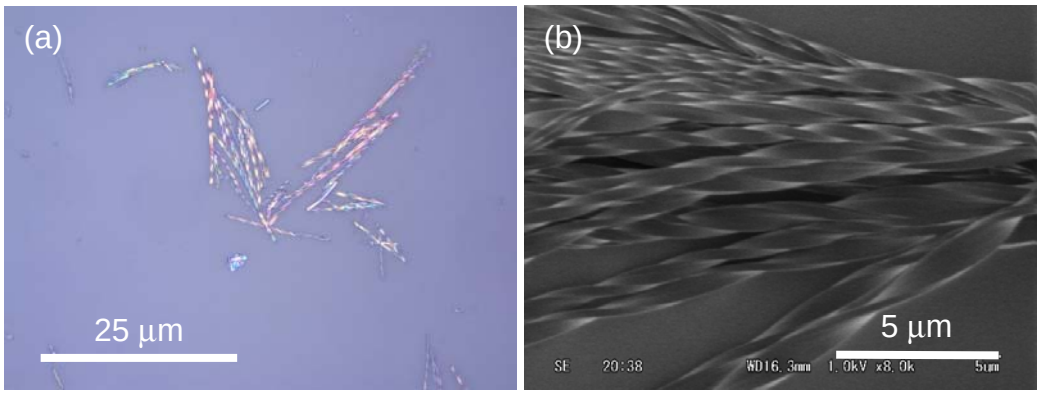


Fig. S3 (a) Optical microscope and (b) SEM images of supramolecular assemblies in methyl lactate.

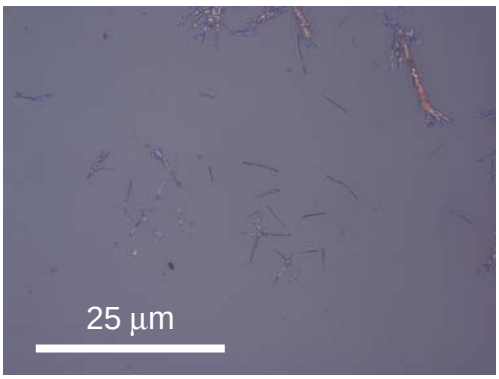


Fig. S4 Optical microscope images of twisted supramolecular assemblies before the formation of dendritic aggregates.

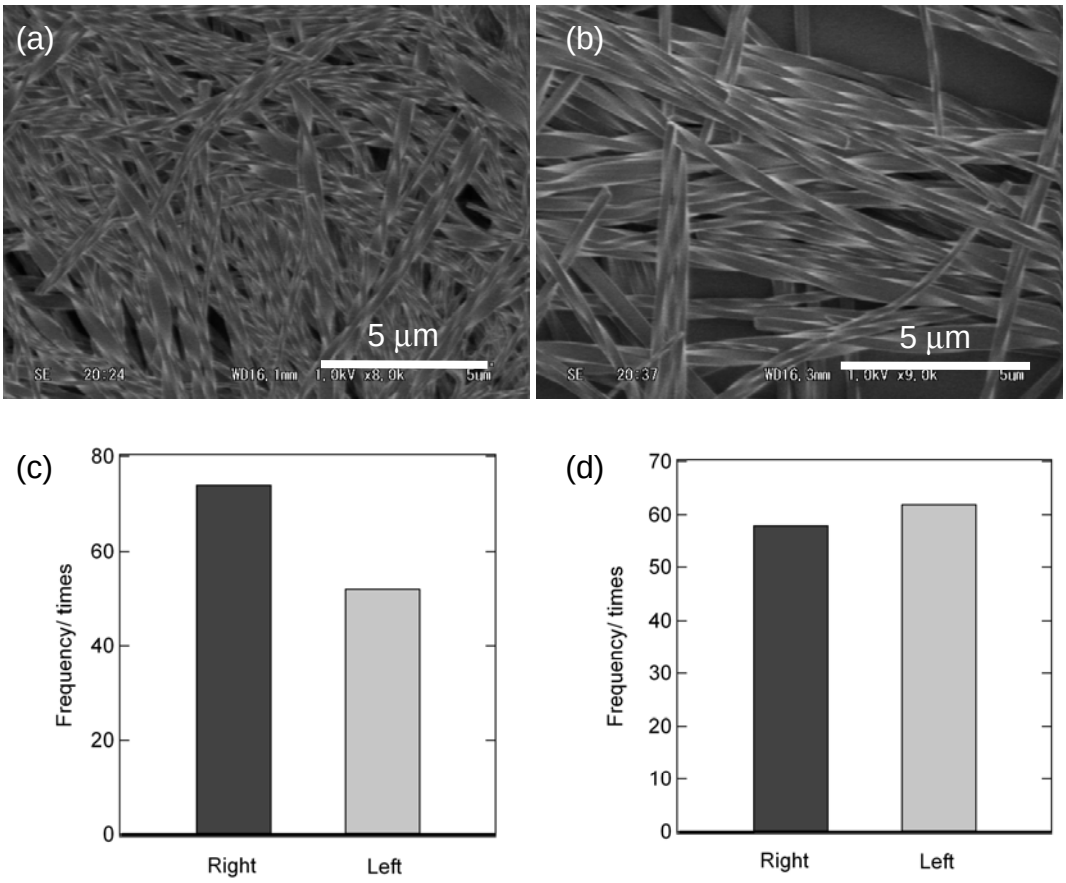
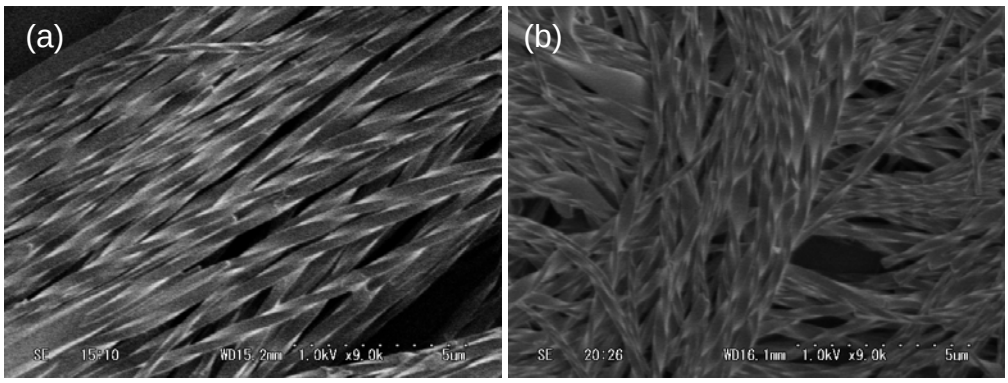


Fig. S5 SEM images and histograms of twist direction of assemblies formed in (a and c) methyl (*S*)-lactate and (b and d) methyl (*R*)-lactate.

Fig. S6 SEM images of twisted assemblies formed in acetonitrile (a) and methyl (*R*)



-lactate (b).

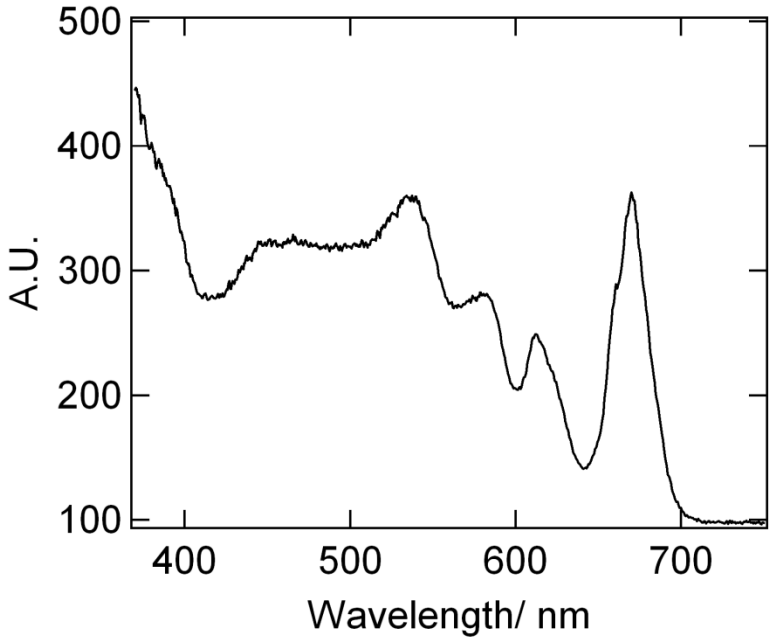


Fig. S7 Reflection spectrum of twisted assemblies formed on glass surface.

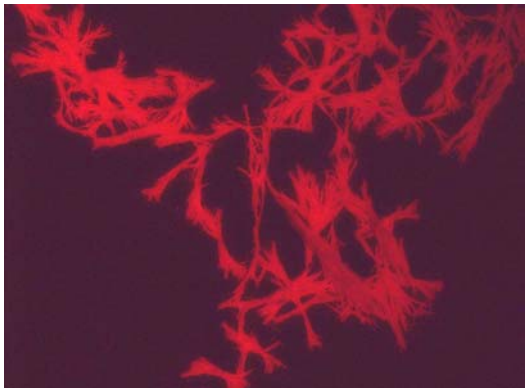


Fig. S8 Fluorescence image of twisted assemblies formed on glass substrate.

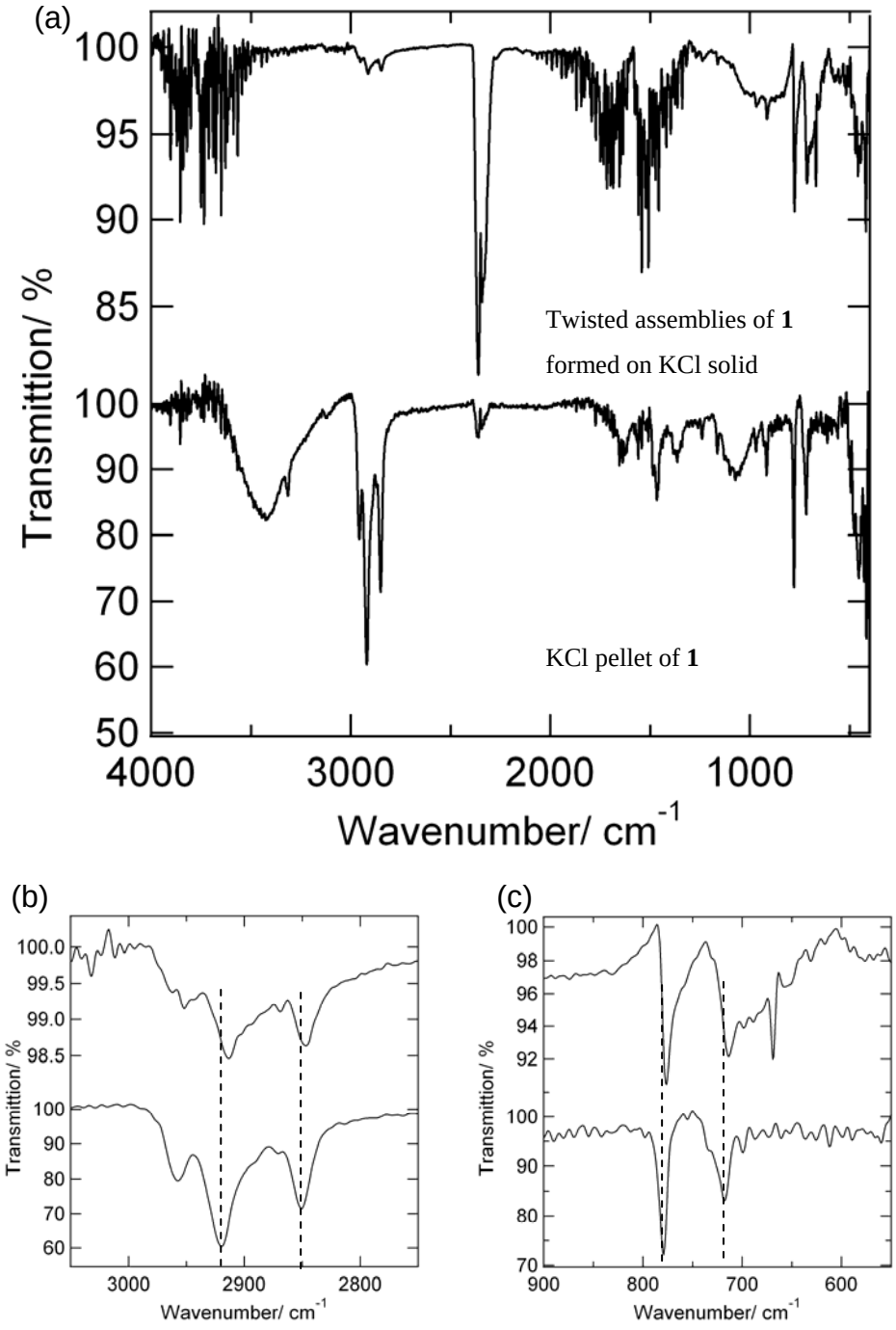


Fig. S9 (a) FT-IR spectra of twisted assemblies of **1** formed on KCl solid surface and porphyrin **1** in KCl pellet. (b) and (c) Enlarged FT-IR spectra.

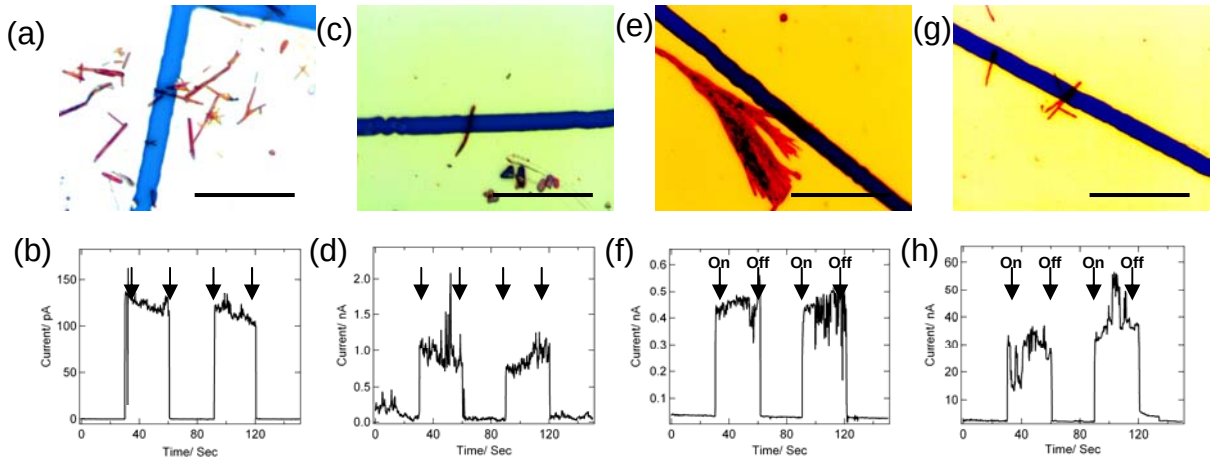


Fig. S10 (a), (c), (e), and (g) Optical microscope images of 4 samples prepared from twisted assemblies between gap electrodes and (b), (d), (f), and (h) *I*–*T* curves of these samples.