

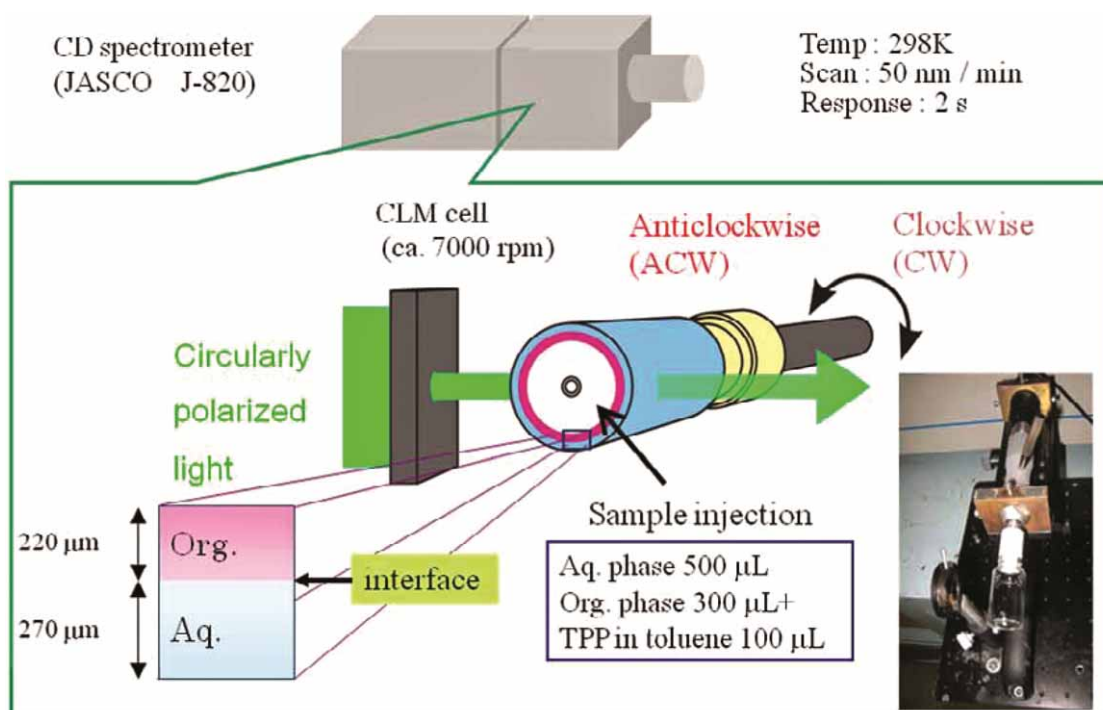
# Chiral recognition of 2-alkyl alcohols with porphyrin J-nanoaggregates at liquid-liquid interface

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**Figure S1** Schematic illustration of Centrifugal Liquid Membrane-Circular Dichroism (CLM-CD) method.

Table S1. Correlations of CD intensity of  $H_4TPP^{2+}$  aggregate and 2-nonaol concentration. These spectra were measured 1 min after introducing the  $H_2TPP$ -dodecane solution.  $[TPP]_{org} = 2.8 \times 10^{-5}$  M,  $[2\text{-nonenol}]_{org} = 0 - 1.0 \times 10^{-3}$  M,  $[H_2SO_4]_{aq} = 4$  M.  $\Delta CD$  is defined as the sum of the absolute values of the 1st and 2nd Cotton intensities.

| Concentration<br>/ M | S-(+)-2-nonanol      |                         |                       | R-(-)-2-nonanol      |                         |                       |
|----------------------|----------------------|-------------------------|-----------------------|----------------------|-------------------------|-----------------------|
|                      | 1st Cotton<br>/ mdeg | 2nd<br>Cotton<br>/ mdeg | $\Delta CD$<br>/ mdeg | 1st Cotton<br>/ mdeg | 2nd<br>Cotton<br>/ mdeg | $\Delta CD$<br>/ mdeg |
| 0                    | 3.6                  | N/A                     | 3.6                   | 3.6                  | N/A                     | 3.6                   |
| $1.0 \times 10^{-8}$ | 6.2                  | N/A                     | 6.2                   | 8.7                  | N/A                     | 8.7                   |
| $1.0 \times 10^{-7}$ | 12.3                 | N/A                     | 12.3                  | 12.4                 | N/A                     | 12.4                  |
| $1.0 \times 10^{-6}$ | 11.7                 | -8.3                    | 20.0                  | -3.2                 | 10.0                    | 13.2                  |
| $1.0 \times 10^{-5}$ | 7.7                  | -2.5                    | 10.2                  | -4.4                 | 11.5                    | 15.9                  |
| $1.0 \times 10^{-4}$ | 15.9                 | -11.6                   | 27.5                  | -18.3                | 17.2                    | 35.5                  |
| $1.0 \times 10^{-3}$ | 16.8                 | -3.4                    | 20.2                  | -5.3                 | 5.0                     | 10.3                  |
| $1.0 \times 10^{-2}$ | 10.5                 | -8.5                    | 19.0                  | -8.4                 | 11.6                    | 20.0                  |

Table S2. Correlations of CD intensity of  $H_4TPP^{2+}$  aggregate and carbon chain length of chiral alcohol. These data were measured 1 min after introducing the  $H_2TPP$ -dodecane solution.  $[TPP]_{org} = 2.8 \times 10^{-5}$  M,  $[2\text{-alkyl alcohol}]_{org} = 1.0 \times 10^{-2}$  M,  $[H_2SO_4]_{aq} = 4$  M.

| Chiral alcohol | Number of carbon atoms | S-(+)-2-alkyl alcohol |                   |                    |
|----------------|------------------------|-----------------------|-------------------|--------------------|
|                |                        | 1st Cotton / mdeg     | 2nd Cotton / mdeg | $\Delta CD$ / mdeg |
| 2-butanol      | 4                      | 5.8                   | N/A               | 5.8                |
| 2-pentanol     | 5                      | 3.8                   | -2.2              | 6.0                |
| 2-hexanol      | 6                      | 4.6                   | -2.0              | 6.6                |
| 2-heptanol     | 7                      | 3.4                   | -4.7              | 8.1                |
| 2-octanol      | 8                      | 4.7                   | -3.7              | 8.4                |
| 2-nonanol      | 9                      | 10.5                  | -8.5              | 19.0               |

Table S3. Dependence of  $\Delta$ CD decreasing rate constant of  $H_4TPP^{2+}$  aggregates on 2-alkyl alcohol concentration.  $[TPP]_{org} = 1.5 \times 10^{-5}$  M,  $[H_2SO_4]_{aq} = 4$  M.

|                        | Decreasing rate constant / $\text{min}^{-1}$ |                      |                      |                      |                      |                      |
|------------------------|--|----------------------|----------------------|----------------------|----------------------|----------------------|
| Chiral Alcohol         | 2-butanol                                    | 2-pentanol           | 2-hexanol            | 2-heptanol           | 2-octanol            | 2-nonanol            |
| Number of carbon atoms | 4  | 5                    | 6                    | 7                    | 8                    | 9                    |
| $1.0 \times 10^{-6}$ M | N/A  | N/A                  | N/A                  | N/A                  | $8.7 \times 10^{-2}$ | $8.1 \times 10^{-2}$ |
| $1.0 \times 10^{-5}$ M | N/A  | N/A                  | N/A                  | $9.0 \times 10^{-2}$ | $8.1 \times 10^{-2}$ | $7.1 \times 10^{-2}$ |
| $1.0 \times 10^{-4}$ M | N/A  | N/A                  | $9.3 \times 10^{-2}$ | $8.2 \times 10^{-2}$ | $7.4 \times 10^{-2}$ | $4.8 \times 10^{-2}$ |
| $1.0 \times 10^{-3}$ M | N/A  | $5.0 \times 10^{-2}$ | $8.3 \times 10^{-2}$ | $7.5 \times 10^{-2}$ | $6.9 \times 10^{-2}$ | $2.4 \times 10^{-2}$ |

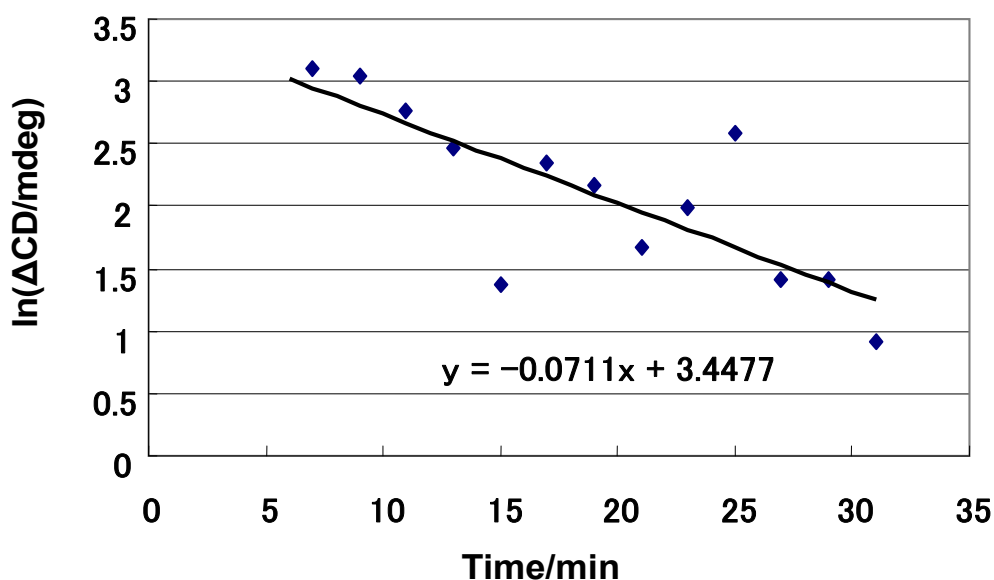


Figure S2. An example of the time dependence of  $\Delta$ CD intensity of the aggregate. The  $t = 0$  min was set to the time of addition of the TPP-dodecane solution.  $[TPP]_{org} = 1.5 \times 10^{-5}$  M,  $[(S)-(+)-2\text{-nonanol}]_{org} = 1.0 \times 10^{-5}$  M,  $[H_2SO_4]_{aq} = 4$  M.