Electronic supplementary information

Aggregation and supramolecular chirality of 5,10,15,20-*tetrakis*-(4-sulfonatophenyl)-porphyrin on achiral poly(2-(dimethylamino)ethyl methylacrylate)-grafted ethylene-vinyl alcohol membrane

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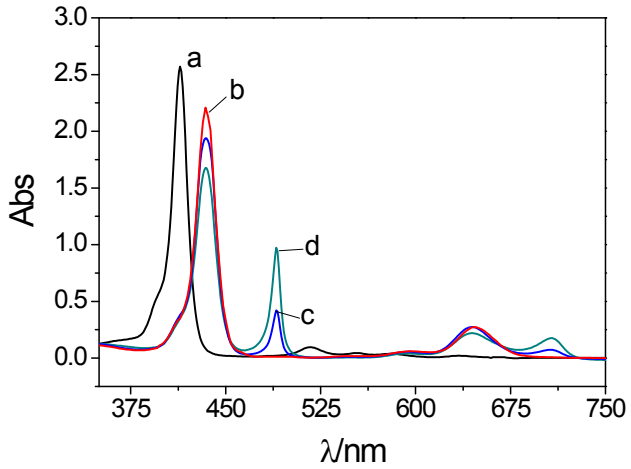

Figure S1. UV-vis spectra of the TPPS in aqueous solutions at pH 7.0 (a), pH 3.0 (b), pH 1.0 (c) and containing Trp at pH 1.0 (d). The concentration of TPPS and Trp were 5μmol/L and 5 mmol/L, respectively.

As shown in Figure S1, at pH 7.0 (a in Figure S1), the deprotonated species of the used porphyrin, H_2TPPS^{4-} showed Soret band at 413 nm and four Q bands at 516, 552, 579 and 633 nm. At pH below 4.9 (b in Figure S1), the Soret band of zwitterionic diacid species H_4TPPS^{2-} shifted to 434 nm and the number of Q bands decreased to two (594 and 644nm). Under more acidic conditions (c in Figure S1), two new absorption bands appeared at about 490 and about 706 nm, which were assigned to the formation of J-aggregates. In the presence of Trp (d in Figure S1), J-aggregation got more intense which was proved by the stronger absorption at 490 and 706 nm. Because the Trp molecules are positively charged due to the protonated amino group, they are able to induce aggregation at a higher rate than H^+ alone.

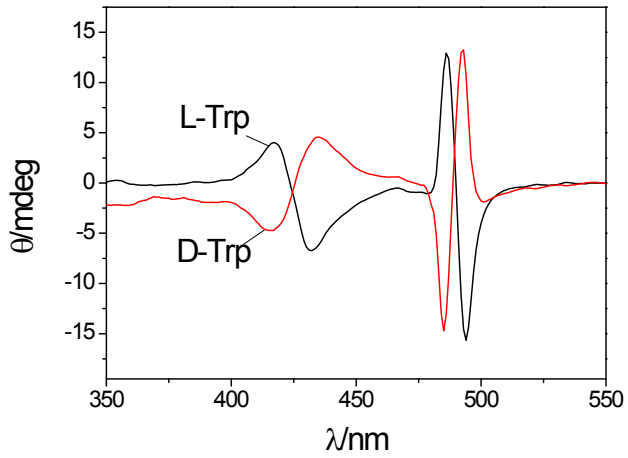

Figure S2. CD spectra of TPPS solution in the presence of Trp at pH 1.0. The concentration of TPPS and Trp were 5 μmol/L and 5 mmol/L, respectively.

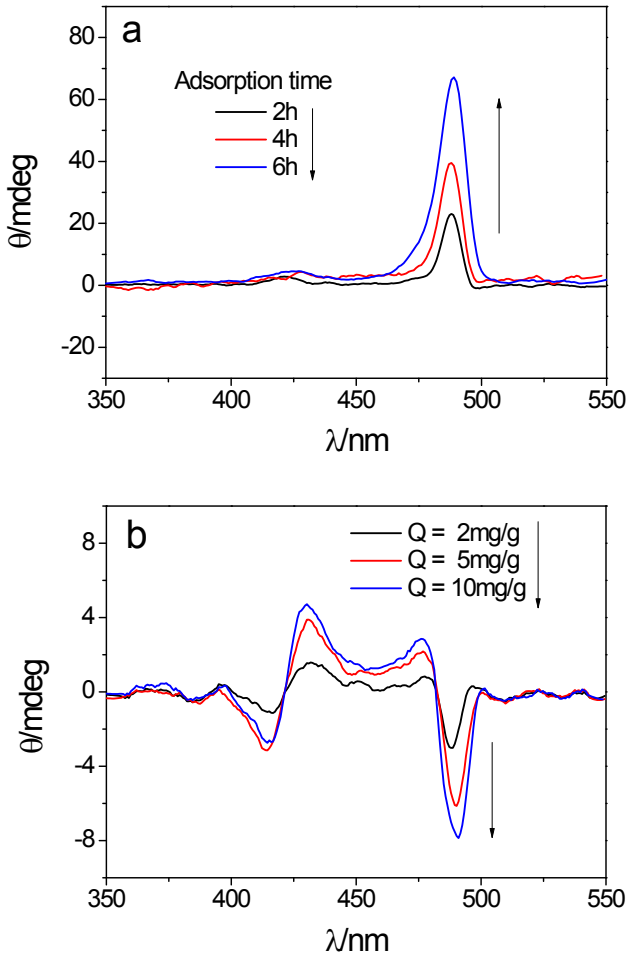

Figure S3. DRCD spectra of EVAL-PDMAEMA/TPPS membrane prepared by (induced pre-aggregation)-adsorption (a) and adsorption-(induced aggregation) (b) methods with different adsorption capacity of TPPS on the membrane (the adsorption amount of TPPS in the case of (induced pre-aggregation)-adsorption was controlled by adsorption time, and the exact value was not applicable). D-Trp was used as the chiral template.

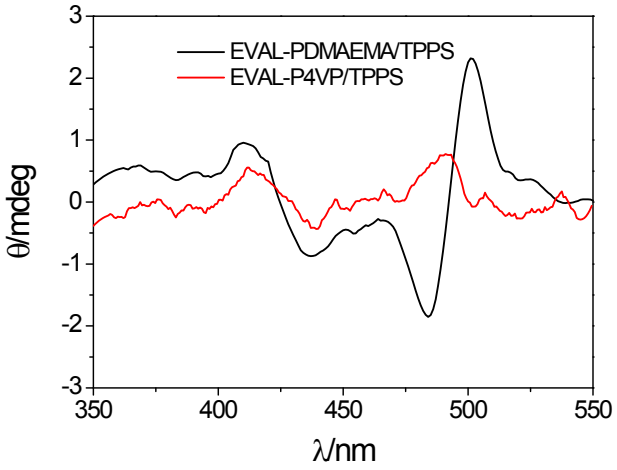

Figure S4. DRCD spectra of EVAL-PDMAEMA/TPPS and EVAL-P4VP/TPPS membrane prepared by adsorption-(induced aggregation) methods. The adsorption capacity of TPPS on the membrane was 3 mg/g, and L-Trp solution of 10 mmol/L at pH 1.0 was used as the chiral template.