Supporting Information for

Electrophoretic Deposition of Amphiphilic Diacetylene Supramolecules: Polymerization, Selective Immobilization, Pattern Transfer and Sensor Applications

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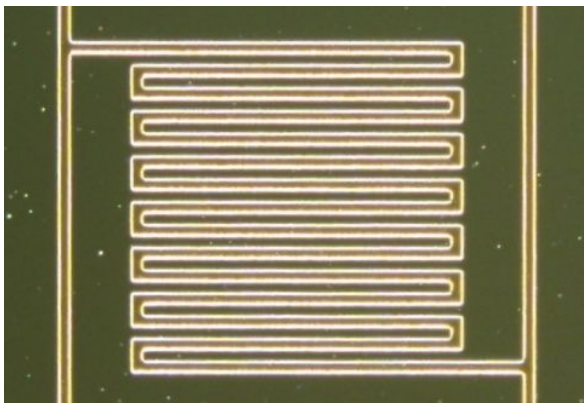
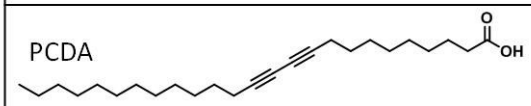
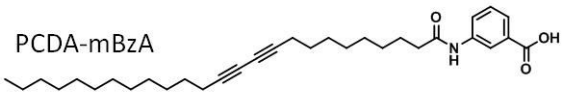
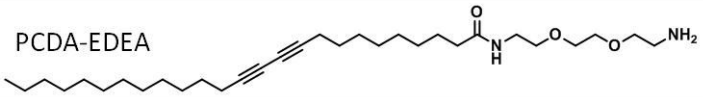
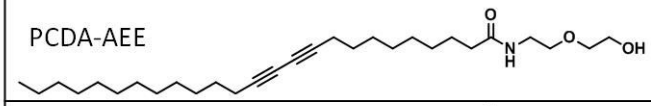
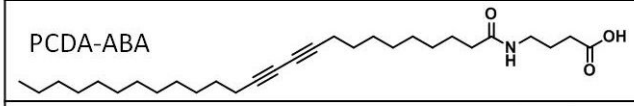
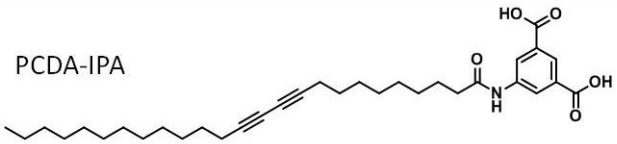
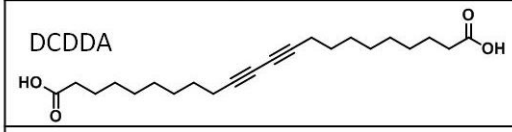
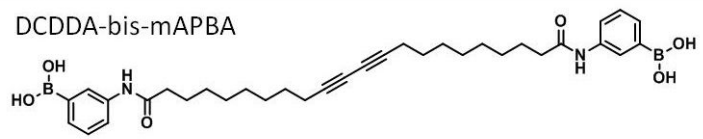


Figure S1. A serpentine type microheater of Au fabricated on a Si substrate for electrophoretic deposition of PCDA vesicles.

Electrophoretic Deposition of DA Vesicles on ITO Layer and Au Patterns

The electrodes were replaced in a vesicle solution and adjustable potential was supplied by a DC power supply (Agilent E3646A). The deposition results of PCDA vesicles of several derivatives, i.e. PCDA , PCDA-EDEA, PCDA-mBzA, PCDA-AEE, PCDA-ABA and PCDA-IPA, and 10,12-docosadiynedioic acid derived vesicles, DCDDA and DCDDA-bis-mAPBA, for different polarities of the working electrodes with molecular structures are given in Table S1.

Table S1. Deposition results for polarities of working electrode.

Vesicle type	Substrate (ITO or Au)	Deposition condition
PCDA 	Anode Cathode	Yes No
PCDA-mBzA 	Anode Cathode	Yes No
PCDA-EDEA 	Anode Cathode	No Yes
PCDA-AEE 	Anode Cathode	Yes No
PCDA-ABA 	Anode Cathode	Yes No
PCDA-IPA 	Anode Cathode	Yes No
DCDDA 	Anode Cathode	Yes No
DCDDA-bis-mAPBA 	Anode Cathode	Yes No

Radical-induced Polymerization Experiments of PCDA-EDEA 2 vesicles

The potassium peroxodisulfate (KPS) solutions (18.5 mM) were mixed with 1mM PCDA-EDEA **2** vesicle solutions with three different volume ratios. Figure S2 shows the photographs of the resultant solutions after mixing. The solutions were kept at dark room in order to prevent the vesicles from light-induced effects.

Time dependent blue color shift of the PCDA-EDEA **2** monomer solutions in Figure S2 indicates that the KPS-derived radicals initiate the polymerization of DA vesicles and the polymerization time can be reduced by increasing the KPS amount.

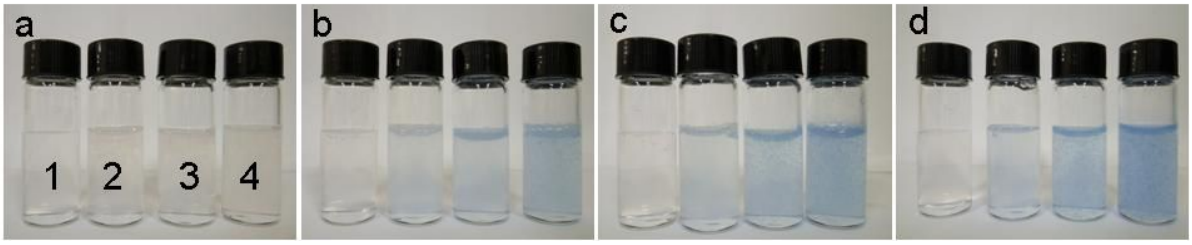


Figure S2. Radical induced polymerization of PCDA-EDEA **2** vesicle solutions using potassium peroxodisulfate (KPS). 1- Control (pure PCDA-EDEA) 2- 15µL: 3mL PCDA-EDEA 3- 30µL KPS: 3mL PCDA-EDEA 4- 60µL KPS: 3mL PCDA. (a) right after mixing the solutions (b) after 30 min (c) after 1 hr and 30 min (d) after 24 hr.

Zeta Potential Measurements of Vesicles

Zeta potential measurements of PCDA **1**, PCDA-EDEA **2** and PCDA-mBzA **3** were performed with Zetasizer Nano-zs (Malvern Inst.). Figure S3 shows the potential distribution profiles of the vesicles in aqueous solutions of 1mM.

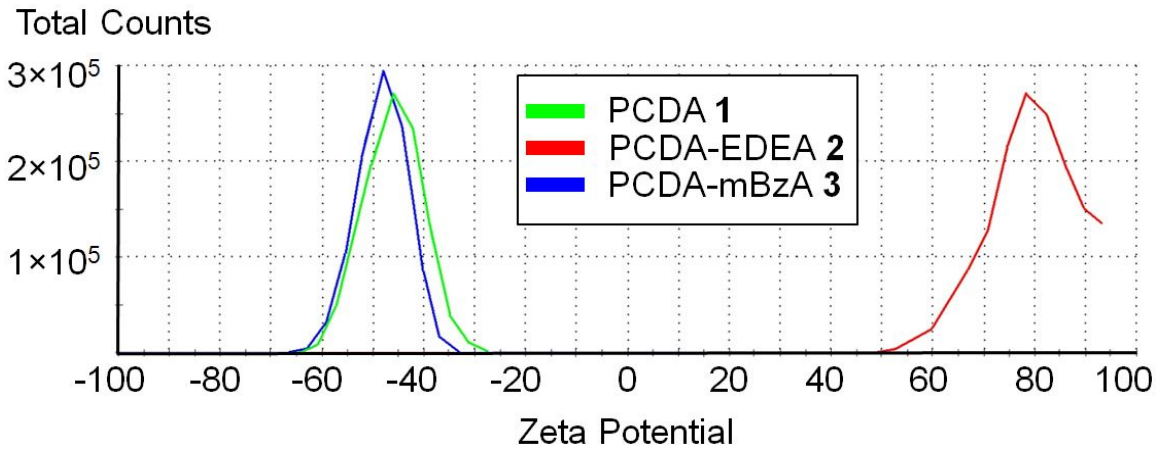


Figure S3. Zeta potential distributions of the vesicles in aqueous solutions.