

Electronic Supplementary Information

Controlled Surface Morphology of Perfluoro-Functionalized PEDOT by Electropolymerization in Ionic Liquids

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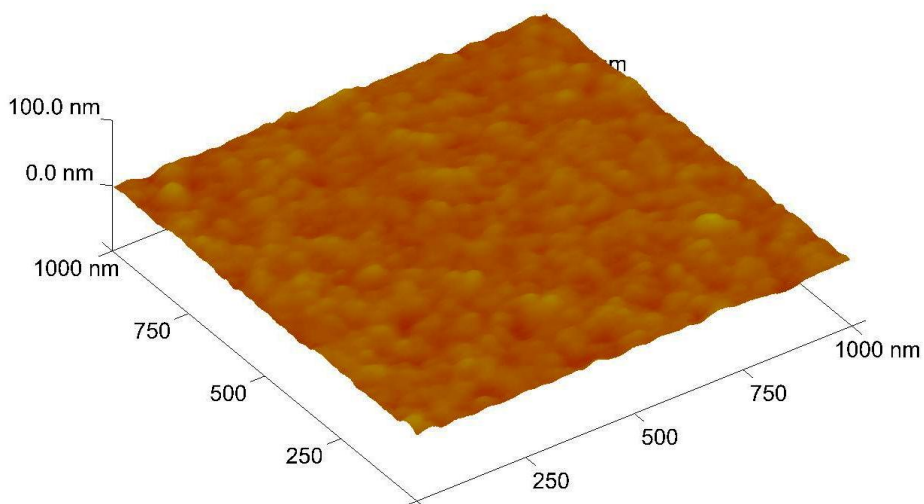
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All chemical reagents were purchased from Sigma-Aldrich, and used without further purification. Perfluoro-functionalized EDOT (EDOT-F) and hydroxyl-functionalized EDOT (EDOT-OH) were synthesized according to the literature procedure.^{1,2}

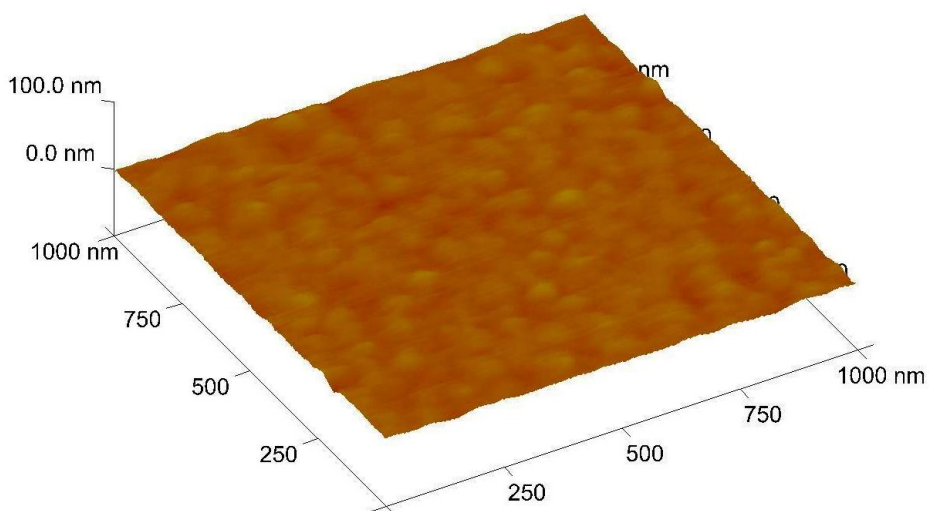
P19 cell culture: P19 embryonal carcinoma stem cells, obtained from ATCC (CRL 1825), were grown in alpha-minimum essential medium (α -MEM; Invitrogen) and 100 units penicillin-streptomycin (Invitrogen) at 37°C in 5% CO₂. The polymer films were sterilized for 30 min in 70% ethanol. The films were then washed with PBS buffer twice and full cell culture medium once. For medium with serum, 2.5% fetal bovine serum (FBS; Invitrogen) and 5% calf serum (iron supplemented; Invitrogen) were added in α -MEM. Cell images were taken by using an AX10 (Zeiss) microscope with an AxioCam MRc5 camera. Cells were stained by using Trypan Blue solution (0.4%, Sigma) just before images were taken.

Instrumentation: Cyclic voltammetric and potentiostatic experiments were performed with a CHI electrochemical workstation in a three-electrode electrochemical cell with platinum as the counter electrode and Ag/AgCl electrode as reference electrode. 25 mM monomer solutions were prepared for electropolymerization. Atomic force microscopy was performed in the tapping mode at room temperature in air with BioScope Digital Instruments. Contact angle measurement was conducted with Contact Angle Systems OCA (Dataphysics Instrument). Two microliters of water was introduced on the surface of polymer films to form a droplet. Contact angle was measured by using software SCA20 for the OCA system. Three films of each electropolymerization procedure have been prepared and the contact angle measurement was conducted on three films to receive average and standard deviations. Quartz microbalance crystal (QCM) experiment was

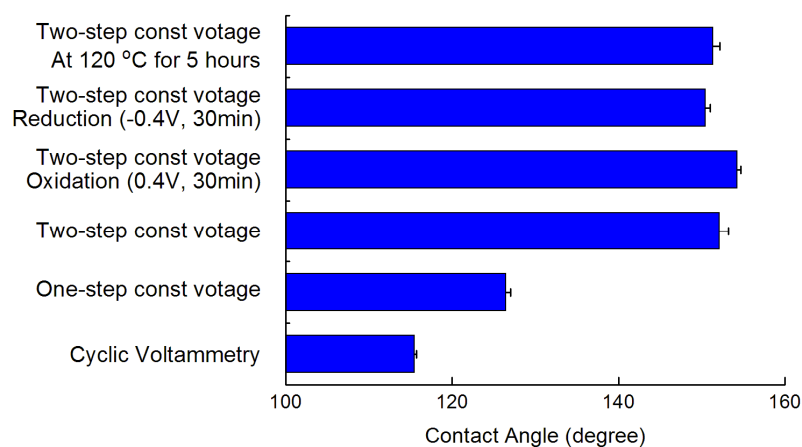
conducted by a Q-SENSE E4 system. Polymers were electropolymerized on Au-coated crystals with 14 mm diameter. Measurement was conducted at a frequency of 4.95 MHz.



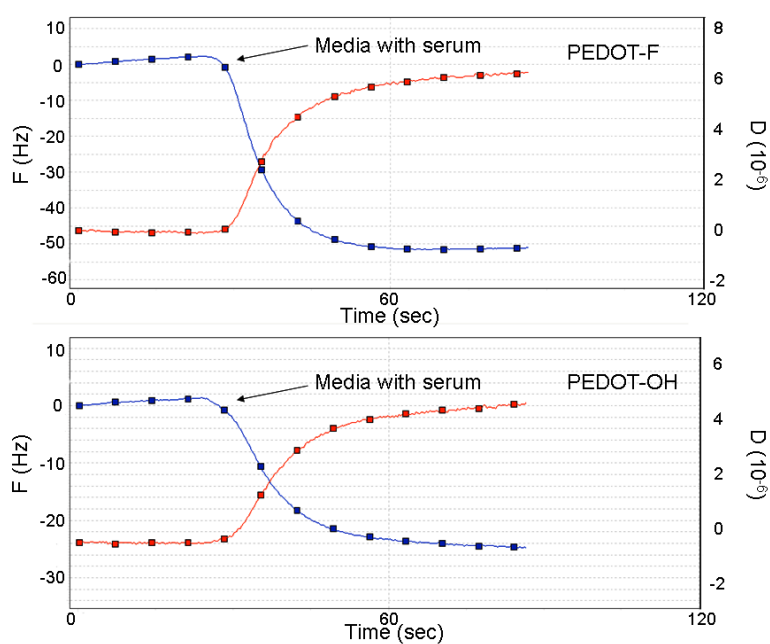
S1-1. AFM image of PEDOT-F thin films prepared by cyclic voltammetry methods. The root-mean-square roughness is 2.68 nm.



S1-2. AFM image of PEDOT-OH thin films prepared by cyclic voltammetry methods. The root-mean-square roughness is 2.13 nm.



S2. The contact angle measurement of PEDOT-F films from cyclic voltammetric, one-step constant voltage, and two-step constant voltage at oxidation state (0.4 V, 30 mins), reduction state (-0.4 V, 30 mins), natural state, and after annealing at 120 °C for 5 hours.



S3. QCM studies of serum adhesion on PEDOT-F and PEDOT-OH thin films.

¹ Schwendeman, I.; Gaupp, C. L.; Hancock, J. M.; Groenendaal, L.; Reynolds, J. R. *Adv. Funct. Mater.* **2003**, *13*, 541.

² A. Lima, P. Schottland, S. Sadki and C. Chevrot, *Synth. Met.*, **1998**, *93*, 33.