Supplementary information for

Precise Patterning of SEBS Surface with UV Lithograph to Evaluate Platelet Function through Single Platelet Adhesion

Wei Ye, Qiang Shi*, Shing-Chung Wong, Jianwen Hou, Xiaodong Xu and Jinghua Yin*

Supplementary information

Contents

S1. ATR-FTIR

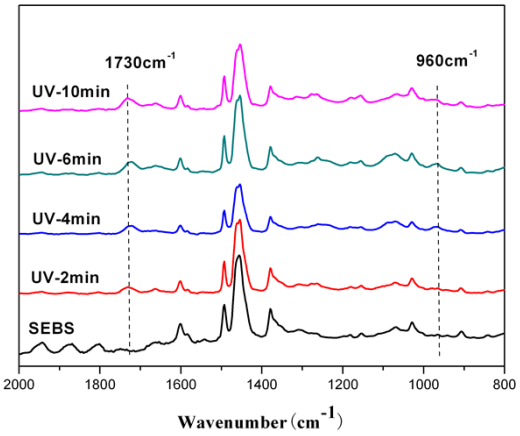

Fig. S1 ATR-FTIR spectra of pristine SEBS and MPC modified SEBS with different UV irradiation time.

Fig. S1 shows the ATR-FTIR spectra of pristine and MPC modified SEBS after different UV irradiation time. Compared with pristine SEBS, two additional peaks show up at 1730 cm^{-1} and 960 cm^{-1} , which correspond to the stretching vibration of C=O group and phosphate group in the MPC unit, respectively. ATR-FTIR spectra provide direct evidence that grafting polymerization of MPC with SEBS has occurred. With the elongation of irradiation, the intensity of phosphate group at 960 cm^{-1} means

the PMPC chain degradation occurred.

S2. Surface Structure Examined by AFM

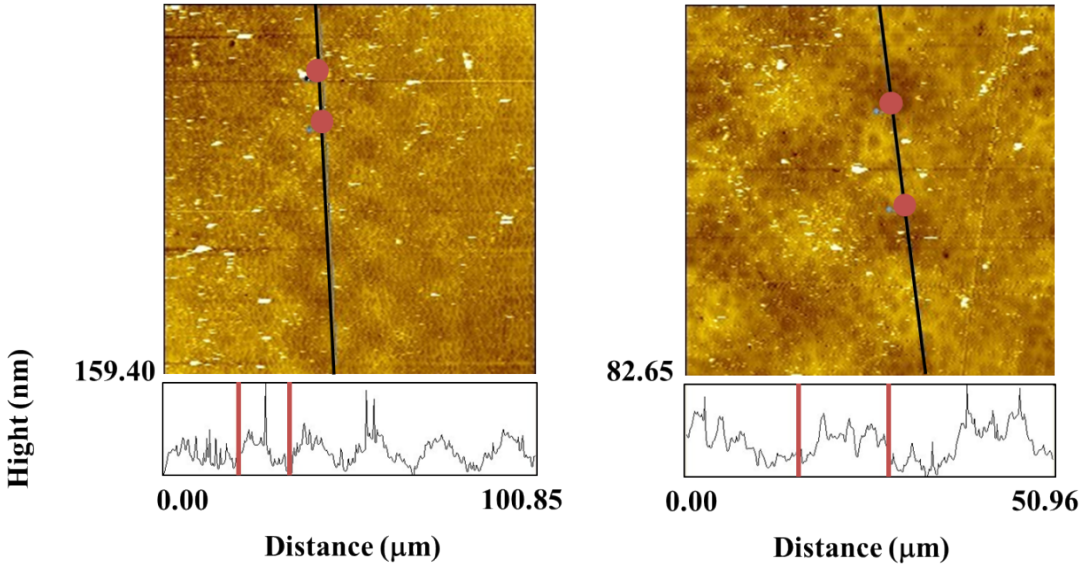

Fig. S2 AFM images and section plots of patterned SEBS films

The surface structure was also examined using AFM. The image demonstrates that our method can achieve the uniform and fine patterned structure on SEBS surface.

S3. Fibrinogen concentration in washed platelet

Fibrinogen removal ratio= [1-(after wash Fib concentration/ before wash Fib concentration)] × 100%. The concentration of fibrinogen before or after wash was determined from the adsorbance at 280nm with a microplate reader. Result in wash platelet 92.8±0.3% fibrinogen were removed.

S4. Protein pre-adsorption on modified SEBS surface

The amount of protein adsorbed was measured using a bicinchoninic acid (BCA) protein assay. The modified SEBS films were equilibrated in a tissue culture plate with PBS for at least 2 h, and then soaked in 0.1mg/ml Fibrinogen/Fibronectin/Collagen solution for 90 min at 37 °C. After rinsed five times with fresh PBS, 1 ml 1 % SDS aqueous solution was added to desorb the protein. Based on the BCA protein assay kit method, the protein concentration was measured at 570 nm with a microplate reader (TECAN SUNRISE, Swiss). The amount of Fibrinogen, Fibronectin and Collagen adsorbed were determined to be 6.83±0.30

μg/cm^2, 4.38±0.18 μg/cm^2, 1.09±0.02 μg/cm^2 respectively.

S5. Time-dependent platelet adhesion and morphology of filopodia

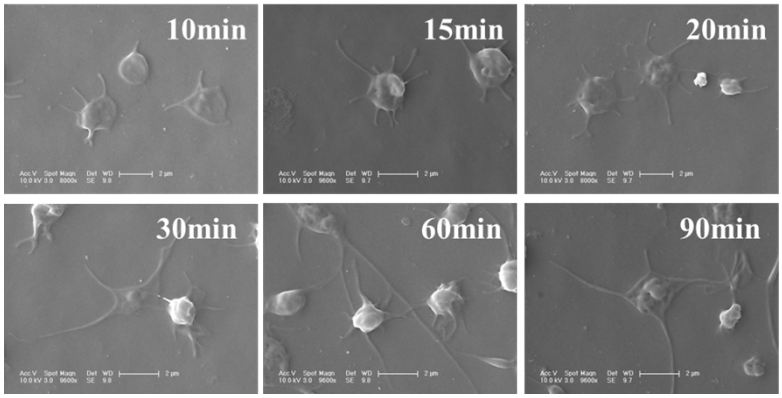

Fig. S3 Typically SEM images of platelet filopodia morphology at different incubation time.（scale bar, 2μm）

In the initiation platelet adhesion (15-20 min) on SEBS films, platelet formed a little filopodia caused by platelet interactions with the substrate. With the incubation time was extended to 30min, filopodia on different platelets stretch to each other show the platelet-platelet interactions.

S6. Time-dependent platelet adhesion with/without pre-adsorbed proteins

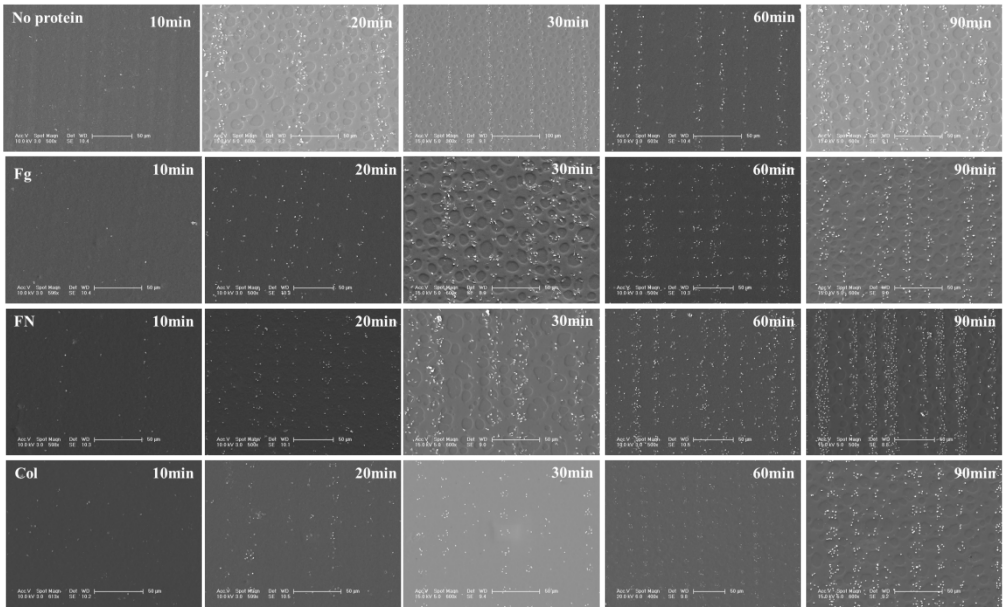

Fig. S4 Typically SEM images of platelet adhesion with/without pre-adsorbed

proteins. (scale bar, 50 μm)

S7. Diluted platelet adhesion on SEBS film

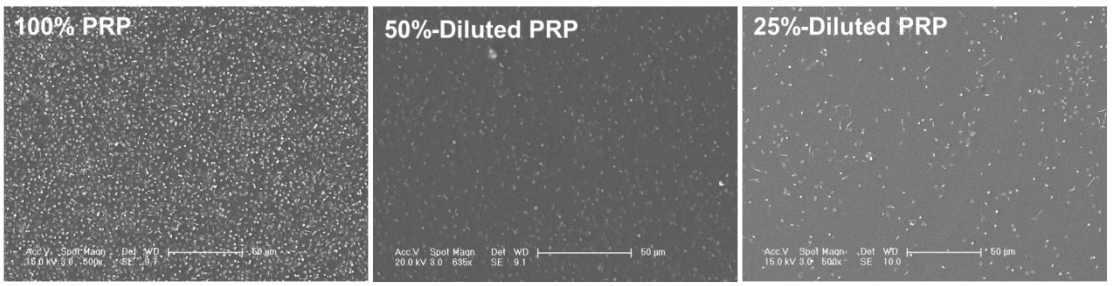

Fig. S5 SEM images of different diluted platelets adhesion on SEBS (bar, 50μm)

After PRP was treated with 1.5 μg/ml ABT-737 for 2 h, the concentration of lived platelets is estimated to be about 50 % concentration of PRP.