Supporting Information to the article

Structure of a Monolayer of Poly (Ethylene Glycol) End-capped with a Fluoroalkyl Group and its Relationship with Protein Adsorption at the Aqueous Interface

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Preparation of Octadecyltrichlorosilane (OTS)-treated Substrates

The slide glasses to be used as solid substrates were cut into pieces of 1 cm × 1 cm in size. The substrates were sonicated in acetone and ethanol, rinsed with deionized water, and finally dried in nitrogen. The substrates were then placed in a freshly prepared "piranha" solution (mixture of 70% concentrated sulfuric acid and 30% hydrogen peroxide) for 10 min at 80□. Subsequently, the substrates were rinsed with flowing deionized water for 20 min and dried in nitrogen. Then, the cleaned glass substrates were added to a glass Petri dish containing 2 mM Octadecyltrichlorosilane (OTS) in toluene and were left for 12h to allow chemisorption of OTS. Substrates modified with OTS were transferred to an oven and were baked for 20 min at 120□. Subsequently, the substrates were cleaned by sonication in toluene and by rinsing with toluene, ethanol, and then deionized water.[1] The OTS-treated substrates had a water contact angle of more than 130°. The washed substrates were dried in nitrogen and were used for transferring the R_f-PEG monolayers.

Protein Adsorption

The R_f-PEG monolayers at target initial pressures of 8, 15, 20, 25, and 30 mN/m were prepared at the air-PBS interface. Concentrated FITC-conjugated BSA solution was added to the PBS subphase from the outside of the moving barrier of the trough; then, the subphase was circulated for 2 hrs with a peristaltic pump (Master flex, Cole-Parmer Instrument Co. LTD., USA) for homogeneous mixing to get the final 0.1 mg/mL of the subphase. Then, protein adsorption to the monolayer was allowed to occur while monitoring the change in the surface pressure caused by protein adsorption. After 24 hrs, the protein-containing subphase was exchanged with clean PBS by using a peristaltic pump. Then, the monolayers were transferred onto the OTS-treated glass substrates by using the Langmuir-Schaffer method and were observed by using fluorescence microscopy. Under a given set of conditions, the monolayers were transferred at 10 different locations. Then, the areas covered by fluorescent protein (%) were analyzed by using an image analyzer (Motic image plus 2.0, Motic Instrument Inc., Hong Kong). The overall scheme of the protein adsorption experiments is depicted in the following figure.

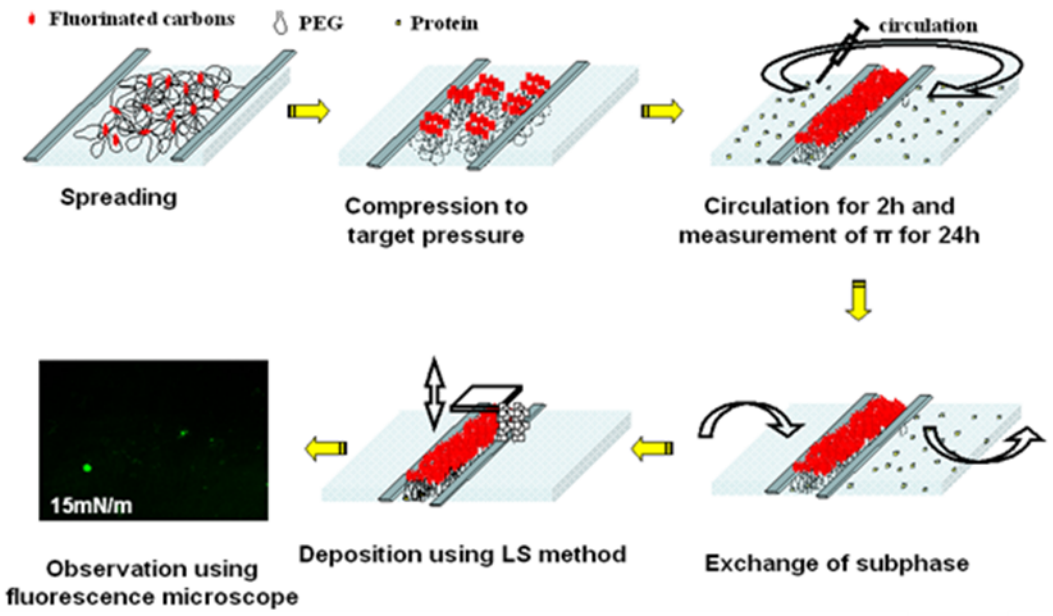

Figure 1. Overall experimental scheme of the BSA adsorption onto the R_f-PEG monolayer.

Reference

1. D.H. Kim, Y. Jang, Y.D. Park and K. Cho, *Langmuir*, **2005**, 3203-3206.