Supplementary Information

An Experimental-Theoretical Analysis of Protein Adsorption on Polymer Brushes

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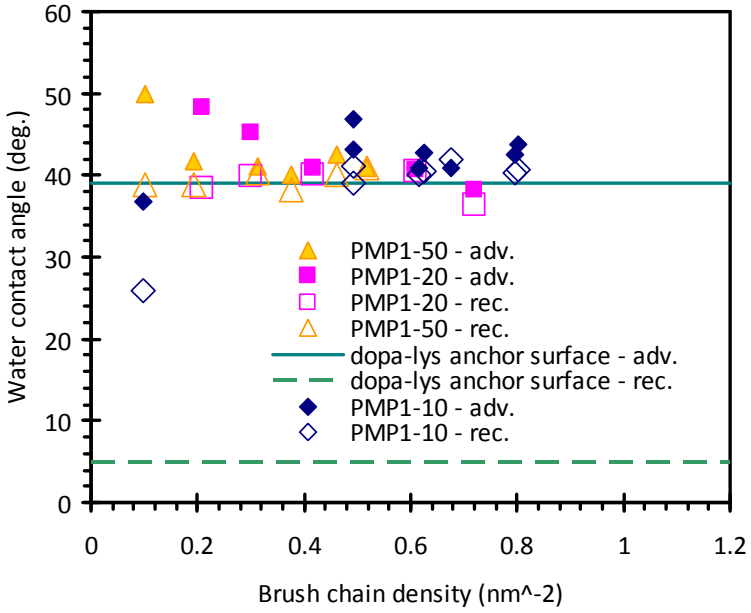

Figure S1. The dynamic water contact angles measured on TiO_2 coated with PMP1-20 brushes of varying chain densities and with a thin film of only the dopa-Lys mussel-mimetic anchor segment. The dopa-Lys surface, which is composed of the same chemical groups in the brush anchor segments of the PMP1 molecules, exhibits a very small receding angle (□5°, too small to be accurately measured) and a very large hysteresis.

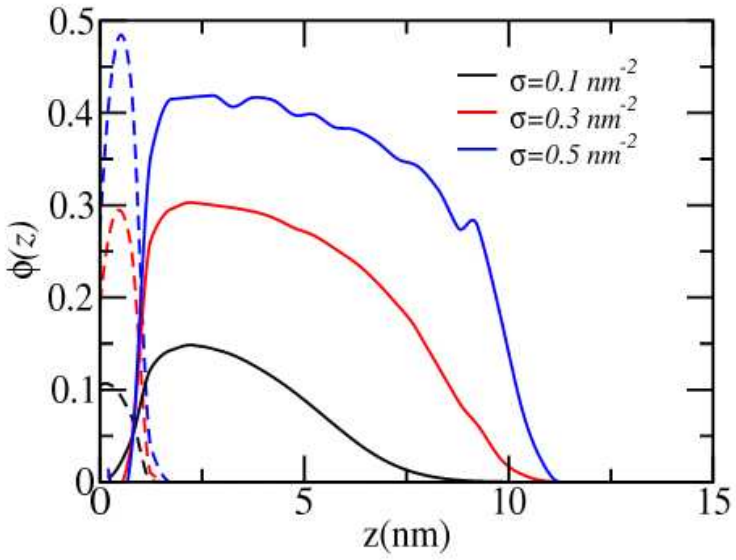

Figure S2. The volume fraction profiles of PMP1-50 for different surface chain densities. At low surface coverage (~0.1 nm^{-2}), the polymer chains prefer taking more curl conformations, which are not stretching. Therefore, the volume fraction of polymer is not extended. In contrast, at higher chain densities, polymer chains adopt more stretched conformations, and the volume fraction of polymer is more extended (0.3 nm^{-2} and 0.5 nm^{-2}).

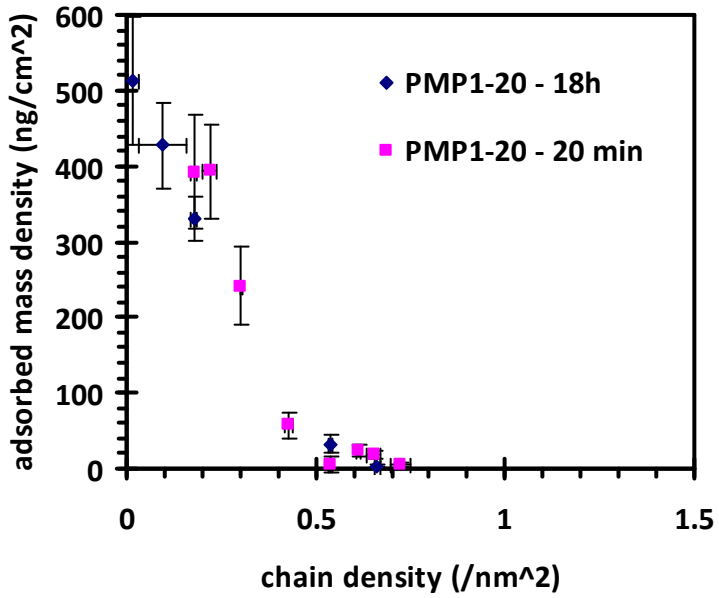

Figure S3. The adsorbed fibrinogen mass densities on PMP1-20 surfaces obtained experimentally by ellipsometry after 20 min and 18 h adsorption.

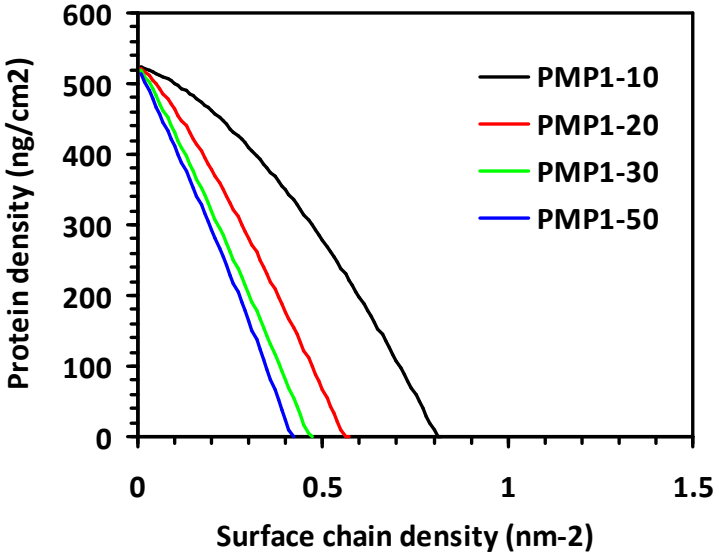

Figure S4. The calculated adsorption isotherms for PMP1-10, 20, 30 and 50. A difference of 20-mer in chain length between the isotherms for PMP1-30 and PMP1-50 is much smaller than the difference between PMP1-10 and PMP1-30. The dependence of protein adsorption with further increases in chain length beyond 50-mer is very weak.