Supporting Information

Translation of Protein Charge and Hydrophilicity to Materials Surface Properties using Thermal Treatment in Fluorous Media

Li-Sheng Wang, Sanjana Gopalakrishnan, Yi-Wei Lee, Jiaxin Zhu, Stephen Nonnenmann and Vincent M. Rotello*

L.-S. Wang, S. Gopalakrishnan, Y.-W. Lee, Prof. V. M. Rotello
Department of Chemistry, University of Massachusetts Amherst, Amherst, MA, 01003, USA E-mail: rotello@chem.umass.edu
J. Zhu, Prof. S. Nonnenmann
Department of Mechanical and Industrial Engineering, University of Massachusetts, Amherst, MA 01003, USA
**Figure S1.** Scanning electron microscopy image of scratched protein film on Si wafer.

**Figure S2.** X-ray photoelectron spectroscopy of PFHP stabilized BSA film.
Figure S3. CD spectra of dip-coated BSA films before and after PFHP stabilization. Slightly decrease in secondary structure was observed. The minor denaturation was also observed when we prepared films using spin-coating and stabilized by NIL.
**Figure S4.** Thickness changes of BSA films in PBS. The films were first stabilized using PFHP method at 180 °C for 15 mins, then incubated in PBS solution for 13 days. The slightly increase of thickness was presumably due to the swelling effect.
Figure S5. AFM images of PFHP film treated with protease. a) Topographic image b) cross-section and c) 3D reconstruction of PFHP film, in which the left-half of the film was incubated in 0.05% trypsin solution for 24 hours.
Figure S6. Fluorescent microscopy images for E. coli cells adhered on Si wafer, PFHP_BSA, PFHP_BSA prepared by dip coating, and polyethylene glycol (PEG) coated surfaces after one day of incubation. Scale bars are 60 um. The PEG coated surface was prepared following Liying’s procedure.\textsuperscript{1} Plasma cleaned silicon wafers were immersed in a 95\% ethanol solution containing 3\% 2-[methoxy(polyethyleneoxy)\textsubscript{6-9}propyl]trimethoxysilane (Gelest) at 37 °C for 3 hours, following by washing with deionized water and dried with N\textsubscript{2} gas.

Figure S7. Fluorescent microscopy images for E. coli cells incubated with PFHP_BSA, PFHP_BSA prepared by dip coating, and PEG coated surfaces for 3 days. Scale bars are 60 um.

\textsuperscript{1} L. Peng, L. Chang, X. Liu, J. Lin, H. Liu, B. Han, S. Wang, \textit{ACS Appl. Mater. Interfaces}, 2017,
9, 17688-17692