Supporting Information

for

Adhesion and Detachment Mechanisms between Polymer and Solid Substrate Surfaces: Using Polystyrene-Mica as a Model System

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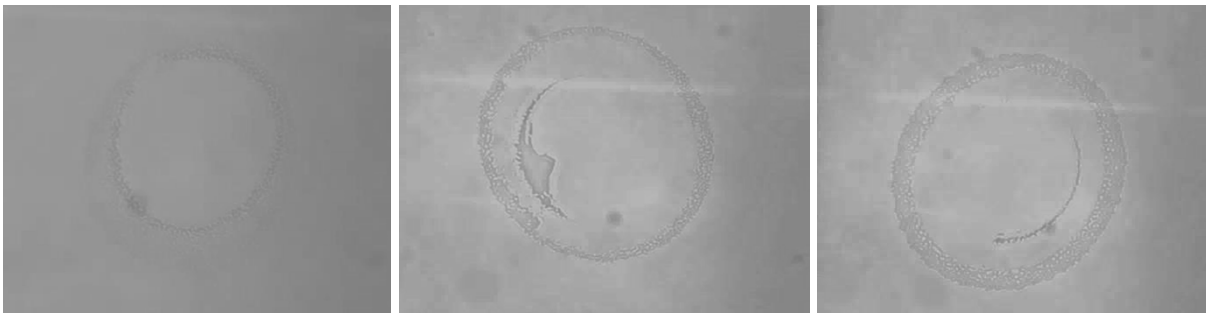


(a) t_c=10 s (b) t_c=20 min (c) t_c=1 hour

Figure S1. Microscope images of mica surface after the two (asymmetric) surfaces (mica and PS1390) were separated from adhesive contact after a contact time of (a) t_c=10 s, (b) t_c=20 min, and (c) t_c=1 hour hours at the maximum load.

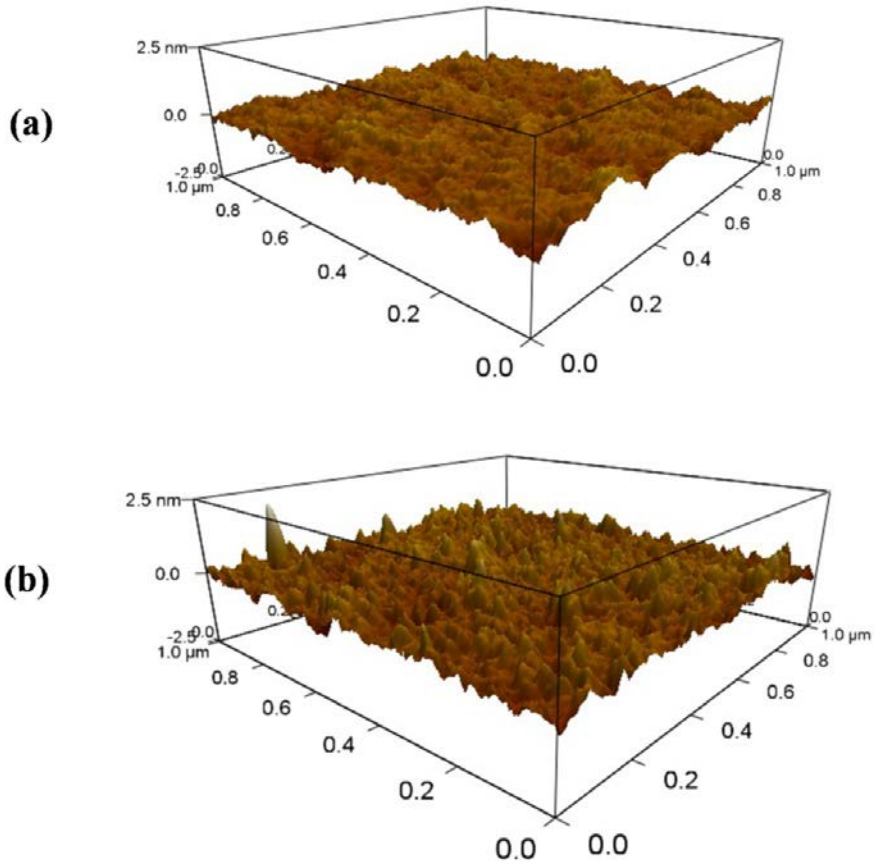
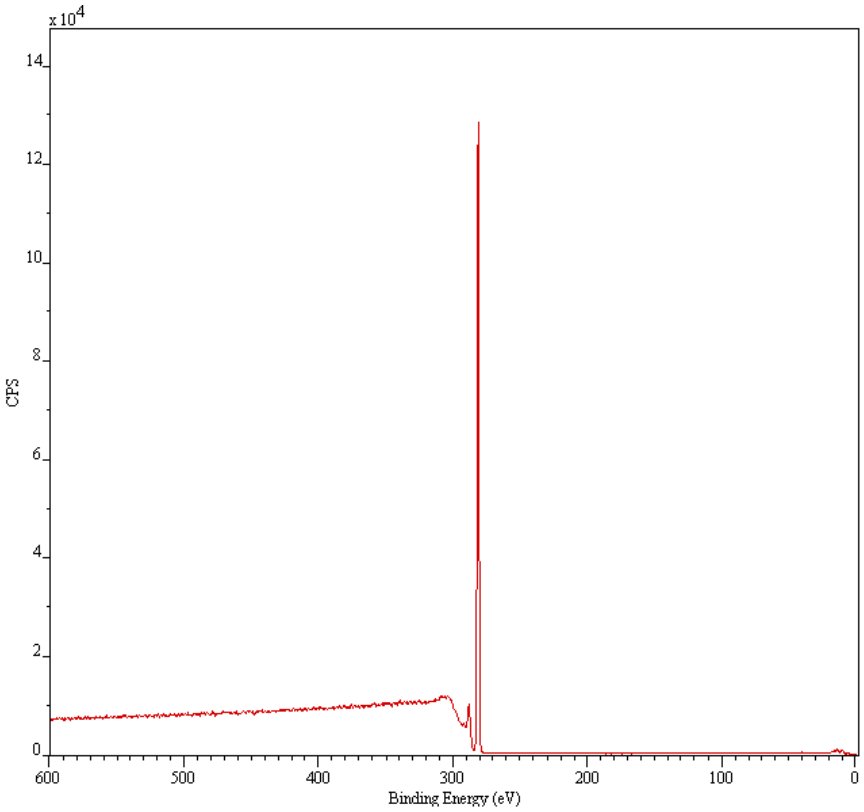
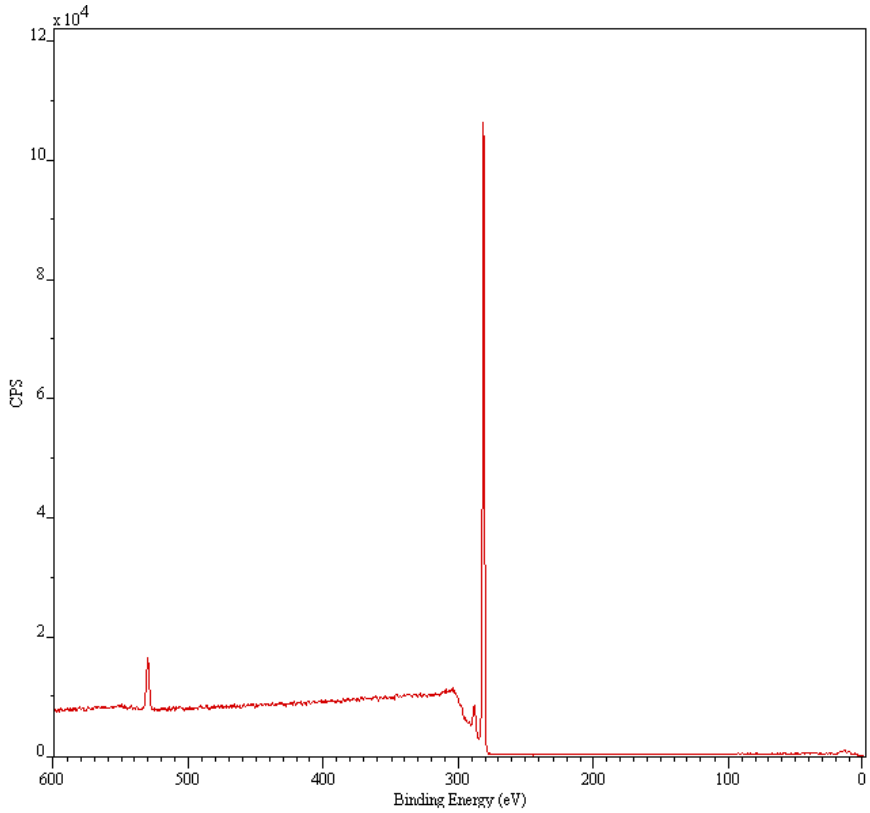


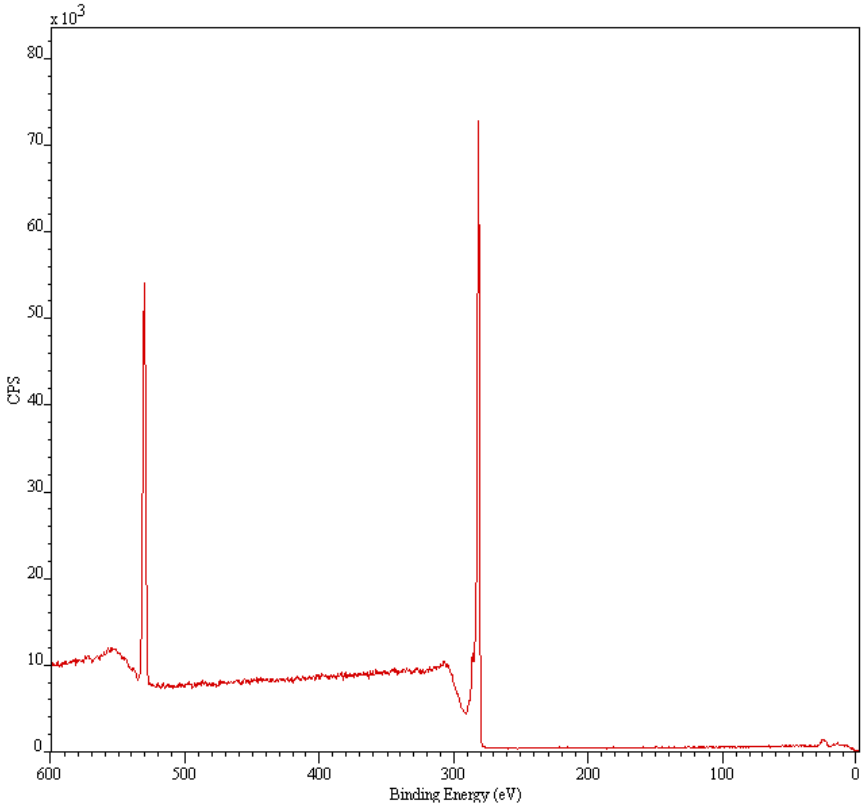
Figure S2. 3D topographic AFM images of (a) untreated and (b) UV/O treated ($t_{UV/o}$=1 min) PS 1M surfaces.


x 10^4
14
12
10
8
6
4
2
0
CPS
600
500
400
300
200
100
0
Binding Energy (eV)

(a)

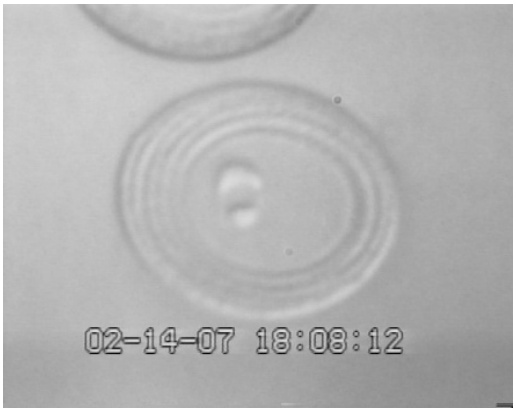

x 10^4
12
10
8
6
4
2
0
CPS
600
500
400
300
200
100
0
Binding Energy (eV)

(b)

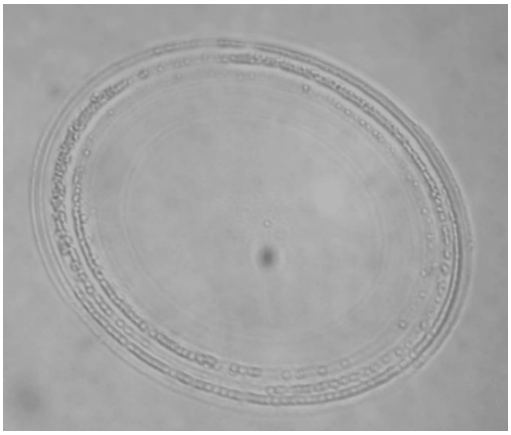


(c)

Figure S3. XPS survey spectra of (a) untreated PS and UV/ozone treated PS for (b) 18 s and (c) 66 s .



(a) Mica surface with polymer residue (b) PS 1M surface after detachment



(c) Mica surface with polymer residue (d) PS 1M surface after detachment

Figure S4. Concentric ring polymer facture patterns on a (a) mica and (b) PS 1M surface (after UV/ozone treatment for ~60 s) associated with their adhesive detachment. (c) and (d) are microscope images for the mica and PS 1M surface (UV/ozone treated for ~60 s) associated with their detachment in another, independent, experiment.