

ARTICLE

Supplementary data

Ethanol verses toluene solutions

Atomic force microscopy results show topography of (a) PMMA film dissolved with 80% ethanol on Zeonor and (b) PMMA film dissolved with toluene on Zeonor are shown in **Figure S1**. There are some pinhole features observed in picture (b), possibly air bubbles, however the overall thickness of PMMA films does not differ between one dissolved in toluene and ethanol. In both cases the average roughness value is less than 1nm. **Figure S2** shows the water contact angle and thickness measurements for spin coated ox. PMMA surfaces prepared with ethanol and toluene solutions.

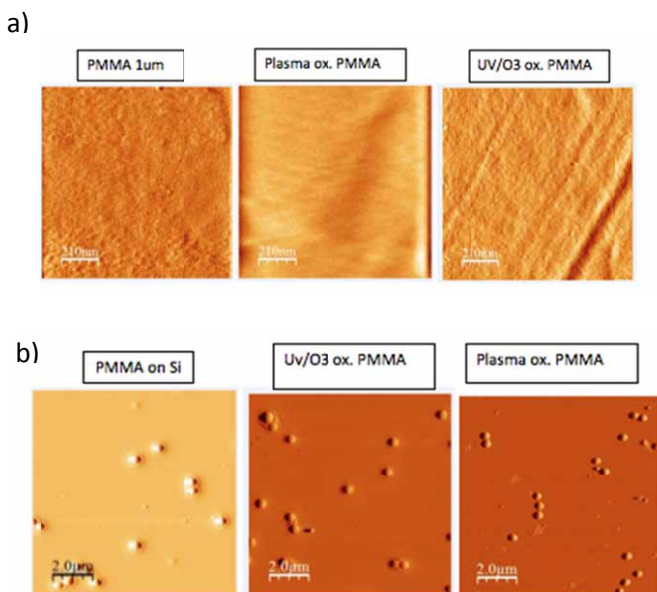


Figure S1. (a) AFM results of spin coated PMMA film dissolved in 80% ethanol on Zeonor, then oxidised by UV/O₃ and oxidised by plasma (images from left). (b) AFM results of spin coated PMMA film dissolved in toluene on Zeonor, then oxidised by UV/O₃ and oxidised by plasma (images from left).

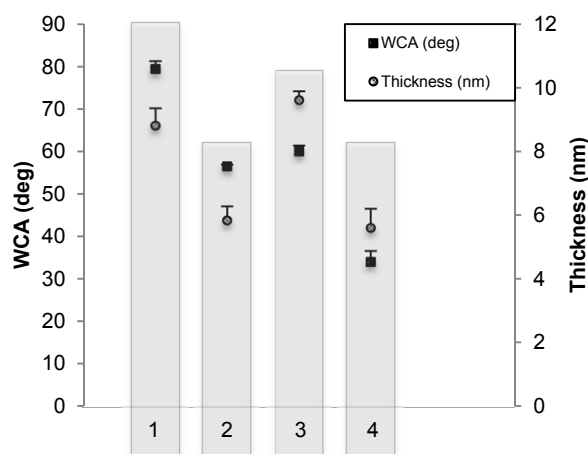


Figure S2. Thickness and water contact angle (WCA) of spin coated PMMA before and after oxidation, dissolved in two different solutes: ethanol and toluene. 1 – Non ox. spin coated PMMA prepared with toluene, 2 - Ox. spin coated PMMA prepared with toluene, 3 - Non ox. spin coated PMMA prepared with ethanol, 4 - Ox. spin coated PMMA prepared with ethanol

Binding experiments

The binding ability of spin coated ox. PMMA was compared with that of commercially available epoxy slides (see **Figure S3**). Different probe concentrations were spotted on the surface (using EDC for PMMA, no EDC is required for epoxy slides), incubated and washed following the standard protocol described above. The slides were then dried and imaged. It can be seen that the oxidised PMMA surface binds up to ten times the amount of probe than the commercially available epoxy slides.

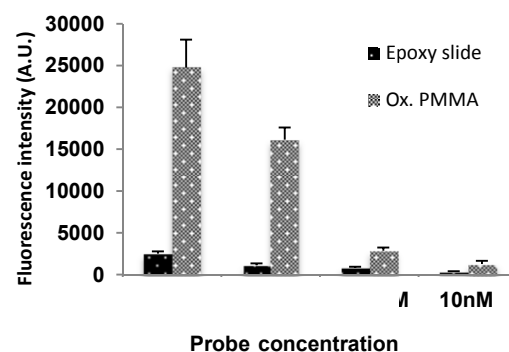


Figure S3. Comparison of commercially available Epoxy substrate with the spin coated ox. PMMA. Four different probe concentrations used: 10 μM, 1 μM, 100 nM and 10 nM. Probe was manually spotted and left incubating for 2 hours. 20 minutes wash applied after incubation. Scanned at instrument gain of 70.

Stability of PMMA surface

The stability of the oxidised spin coated PMMA surface was investigated. The thickness of three samples was measured using ellipsometry, washed for 10 minutes in 0.2XSSC+ 0.01% SDS followed by 10 minutes with 0.2XSSC, dried and the thickness measured again. This was repeated four more times. The graph is **Figure S4** shows how the thickness does not decrease after washing, indicating that the spin coated PMMA is extremely robust when bound to the silicon surface (used for ellipsometry measurements).

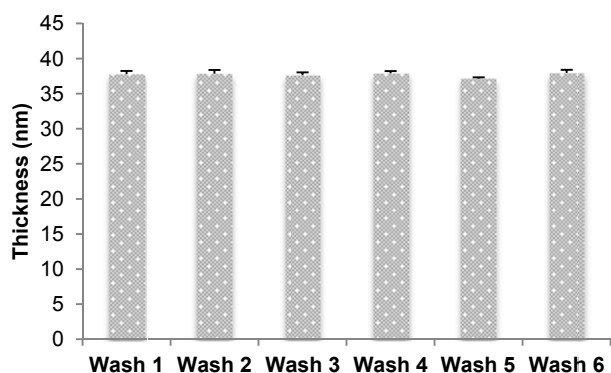


Figure S4. Thickness (nm) of ox. spin coated PMMA on silicon substrate after 6 washes. Each wash: 10 minutes with 0.2XSSC+ 0.01% SDS followed by 10 minutes with 0.2XSSC.