Supplementary Information

Bioactive nanomembranes of semiconductor polythiophene and thermoplastic polyurethane: Thermal, nanostructural and nanomechanical properties

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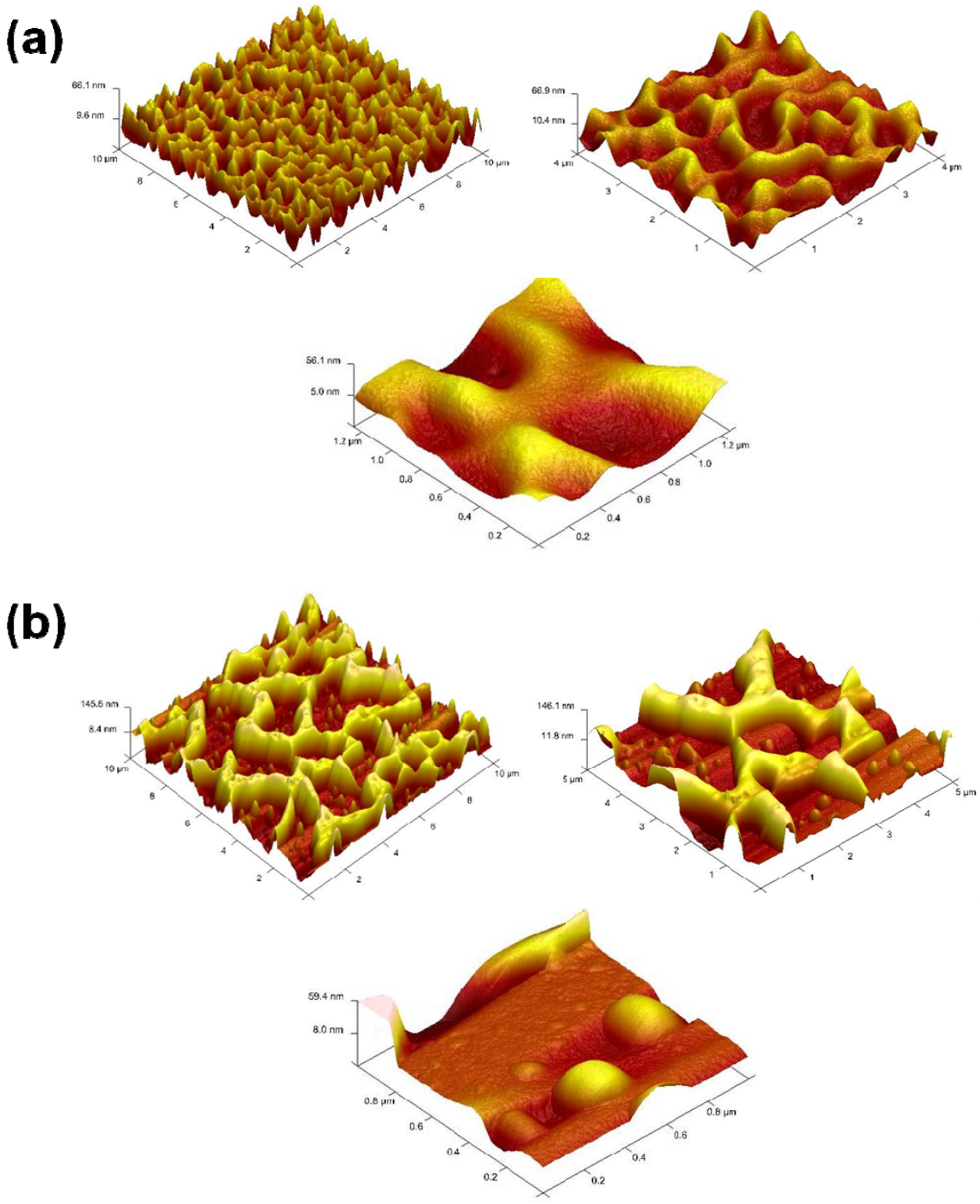

(Figure S1, part 1)

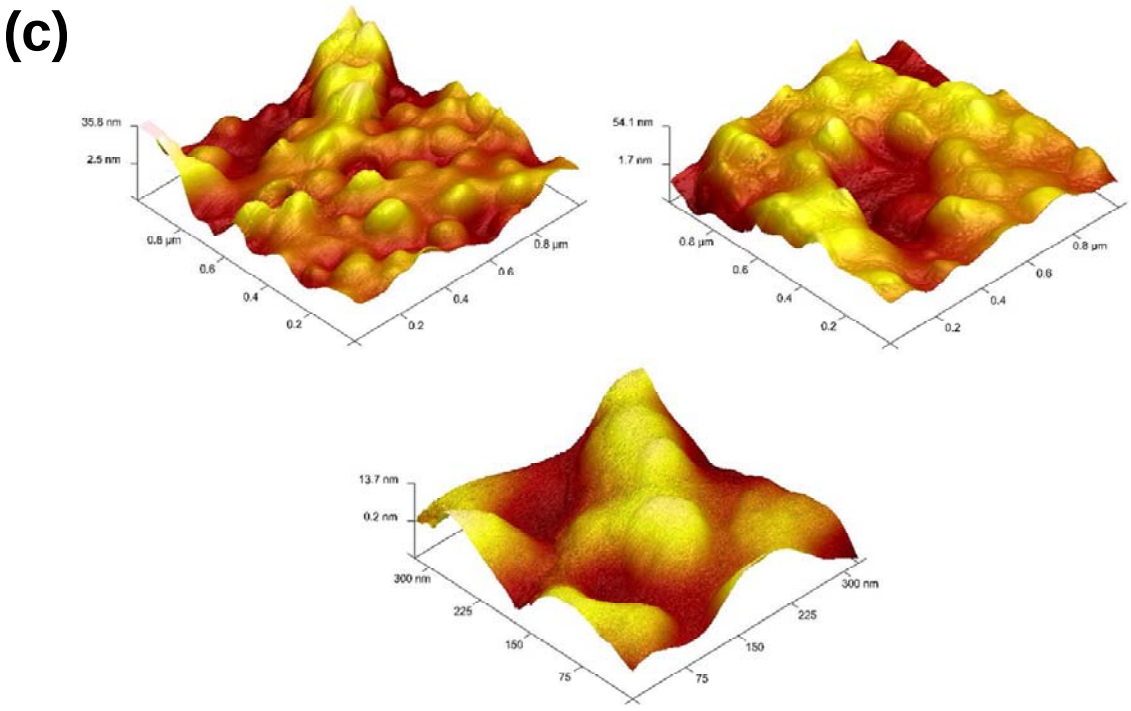

Figure S1. 3D AFM micrographs of ultra-thin films of (a) TPU, (b) P3TMA and TPU:P3TMA 40:60 supported on ITO

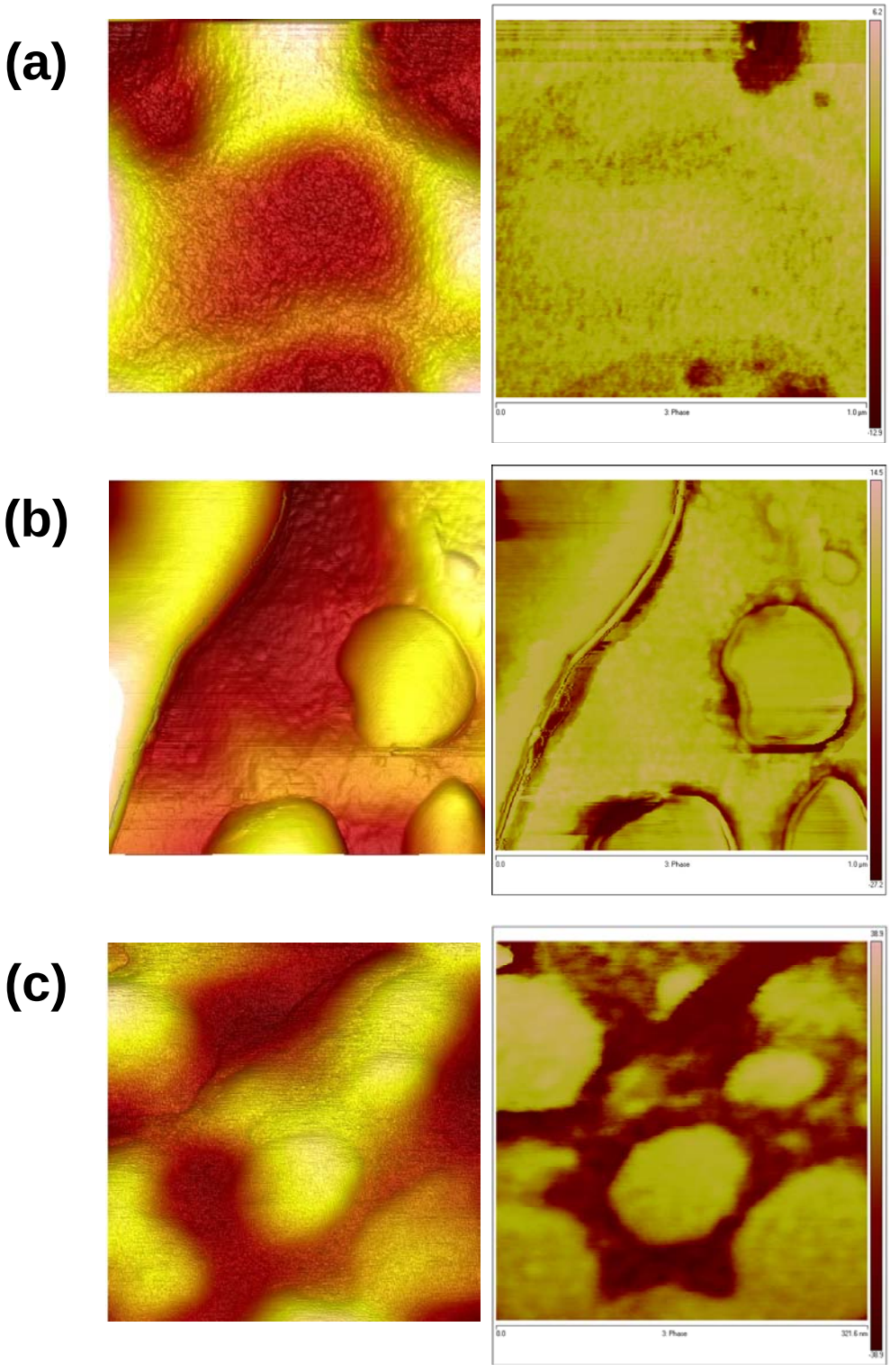

Figure S2. Heigh (left) and phase (right) AFM images of ultra-thin films of (a) TPU, (b) P3TMA and TPU:P3TMA 40:60 supported on ITO.

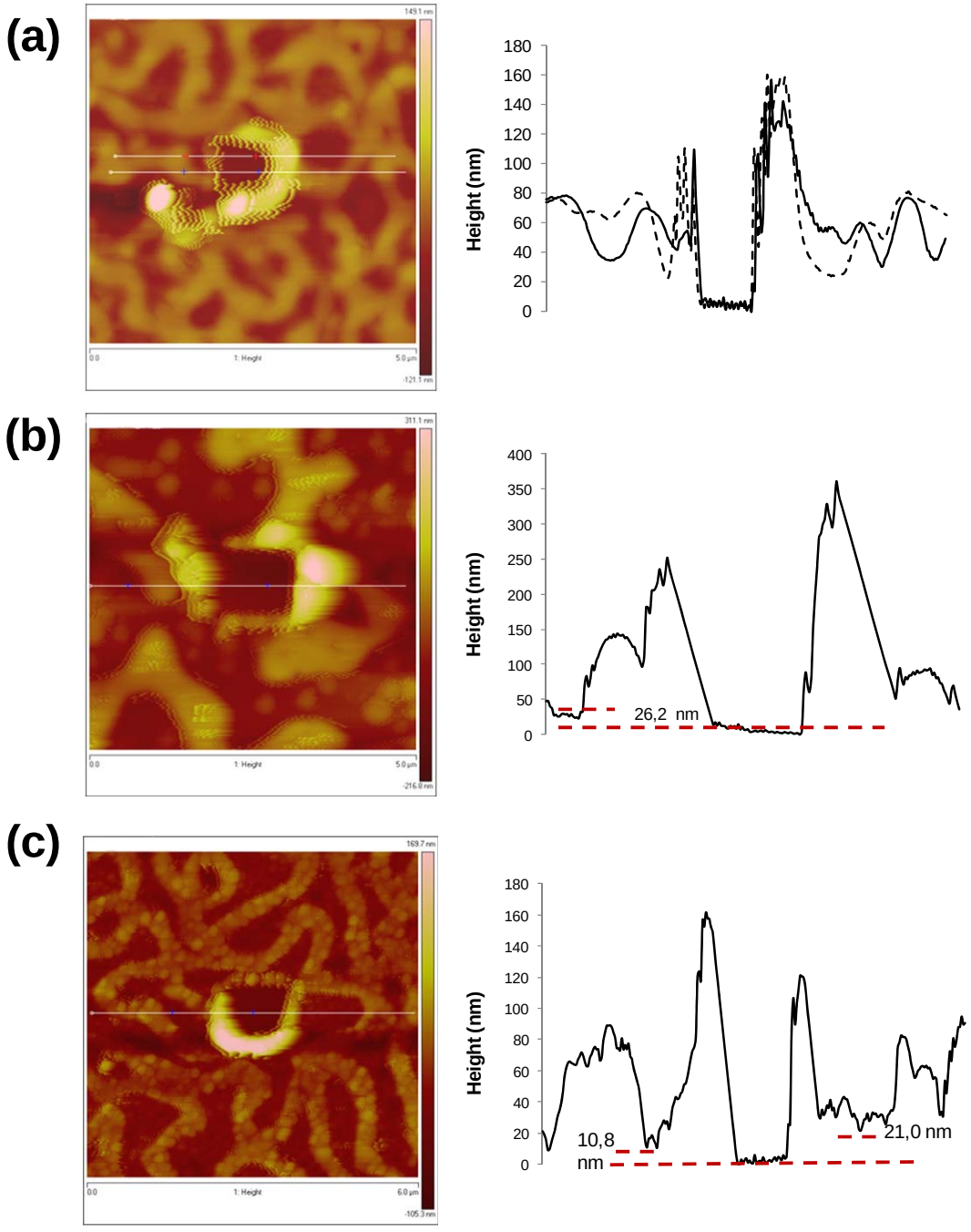

Figure S3. AFM micrographs of supported ultra-thin film scratches: (a) TPU; (b) P3TMA; and (c) TPU:P3TMA 40:60.

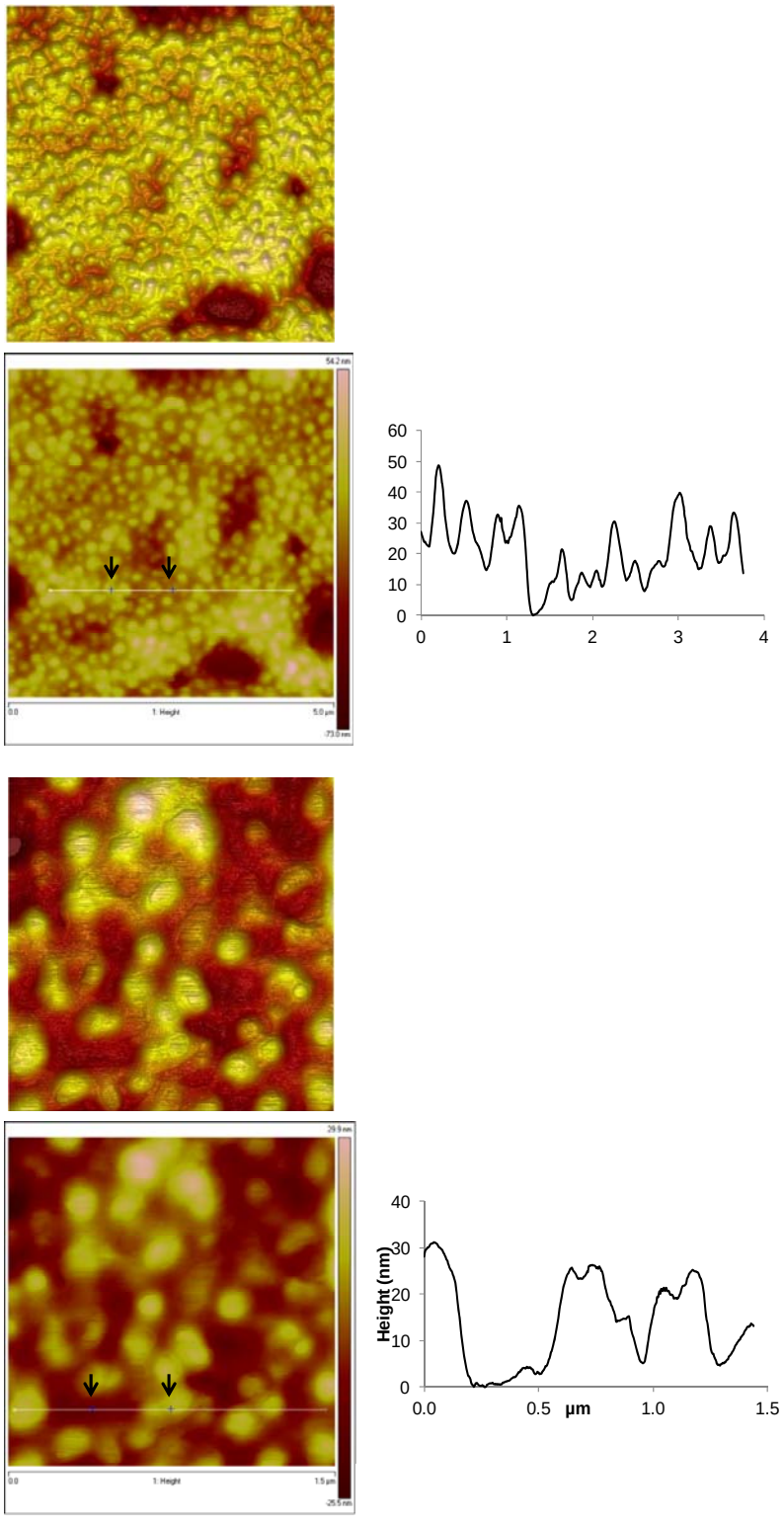

Figure S4. AFM micrographs of TPU:P3TMA 40:60 without folds.

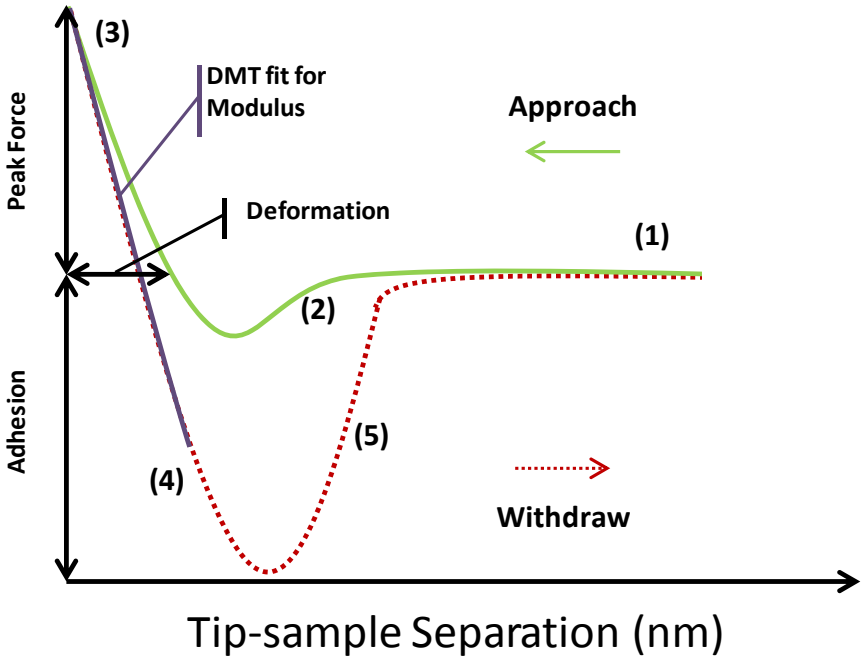

Figure S5. Force-separation curve obtained during the PeakForce AFM tip tapping. The green and dotted-red profiles (trace and retrace, respectively) represent the tip approaching process and the tip withdrawal, respectively. Part of the retrace curve (purple) is used to calculate the Derjaguin-Muller-Toropov (DMT) elastic modulus. The minimum force in the retrace curve is used for mapping the adhesion properties. (1) Little or no force on the tip. As the piezo expands and the separation decreases, the tip is pull down (2) by attractive forces (*i.e.* van der Waals, capillarity, electrostatic…) until it arrives to the surface (separation = 0). The tip is pushed into the sample until the peak force set point is reached (3). The tip is pulled up by the piezo and the force on the tip decreases to a minimum value (4), and the tip comes off the surface. Finally, forces on the tip decreases as the separation increases (5) and the piezo returns to its initial position.

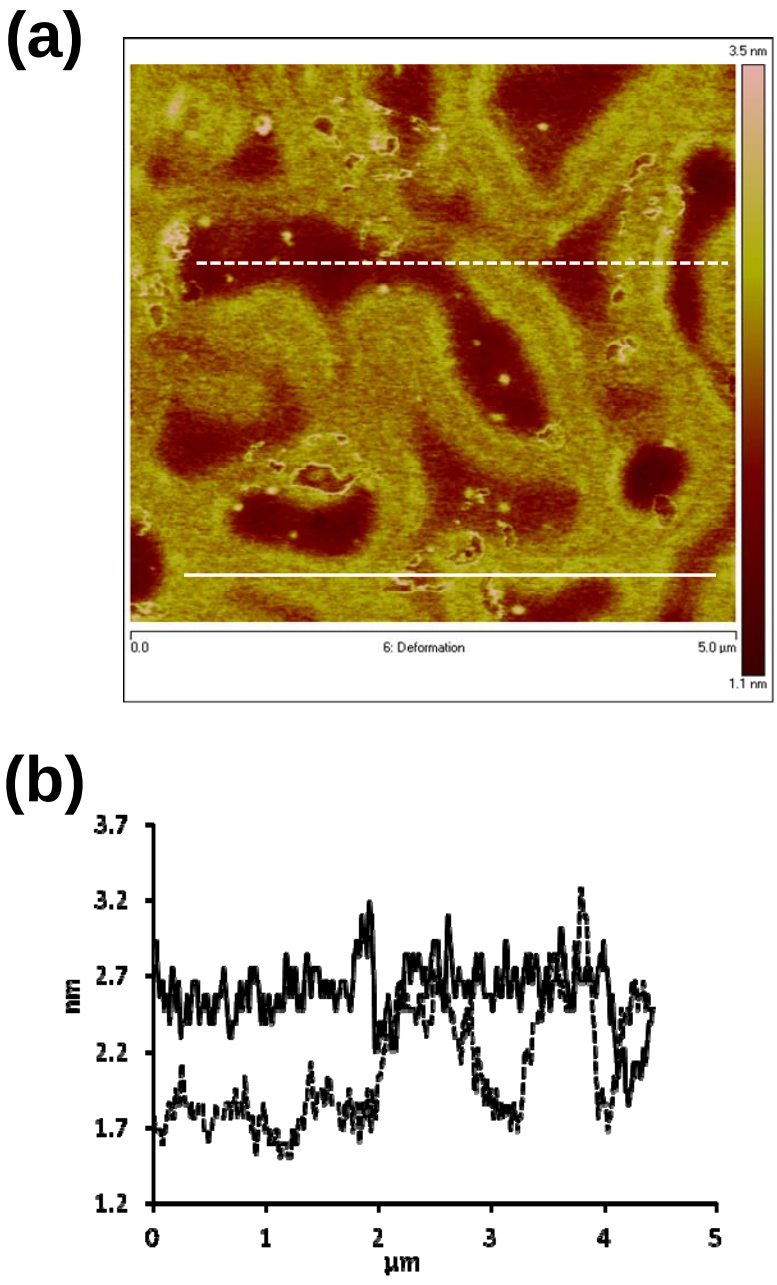

Figure S6. (a) Deformation mapping image for TPU and (b) its corresponding cross-profiles.

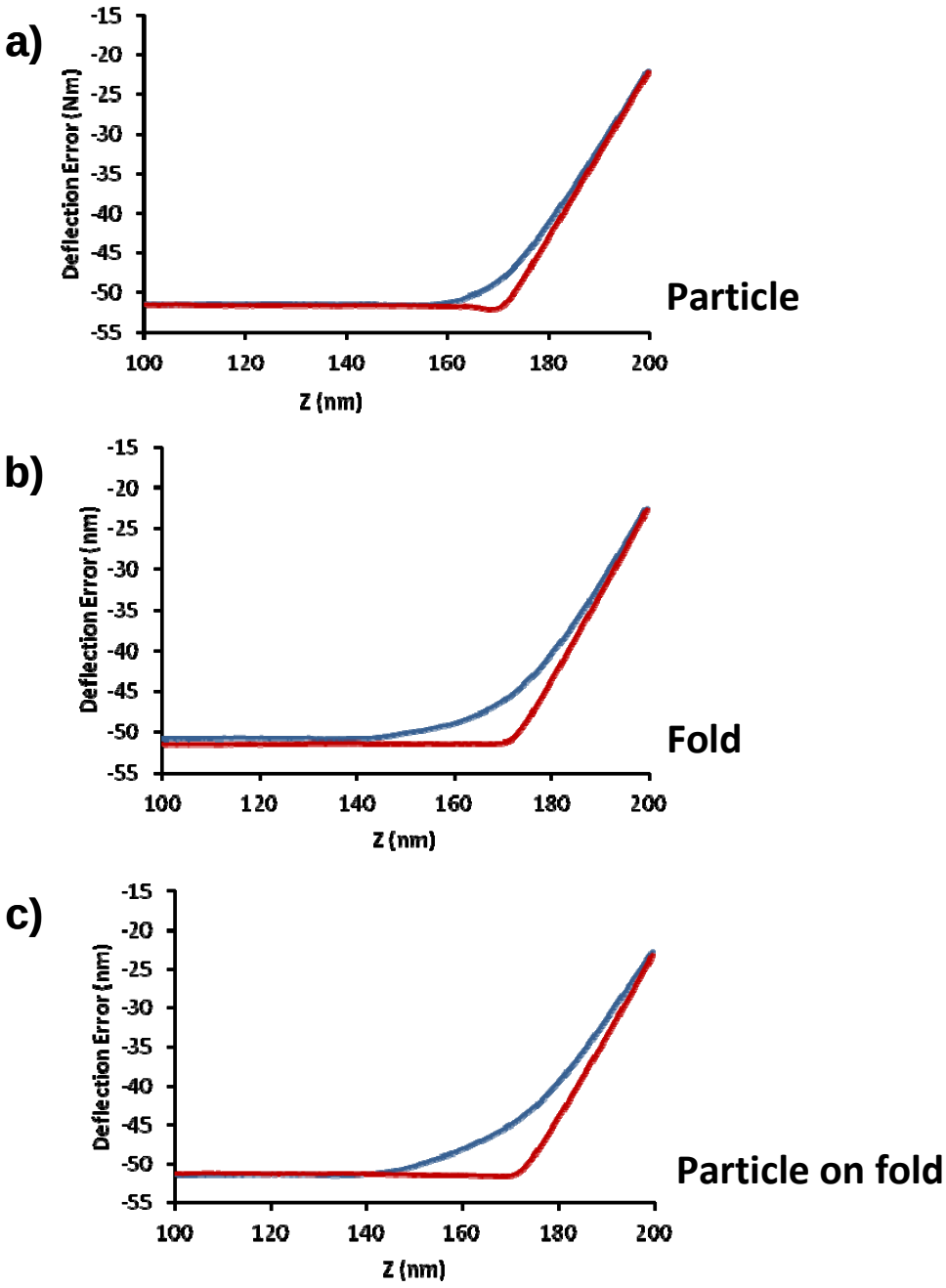

Figure S7. Force-separation curves obtained at 1Hz for: (a) P3TMA granule; (b) TPU bottom level; and (c) P3TMA granule on a fold. In all cases blue and red refer to trace and retrace, respectively.