Electronic Supplementary Material (ESI) for Soft Matter.

Supplementary Information

Quantitative mechanical analysis of thin compressible polymer monolayers on oxide surfaces

Qian Huang[a], Ilsun Yoon[a], Josh Villanueva[a], Kanguk Kim[b], and Donald J. Sirbuly*[ab]

[a]Department of NanoEngineering, University of California, San Diego, La Jolla, CA 92093, USA,

[b]Materials Science and Engineering, University of California, San Diego, La Jolla, CA 92093, USA

E-mail: dsirbuly@ucsd.edu

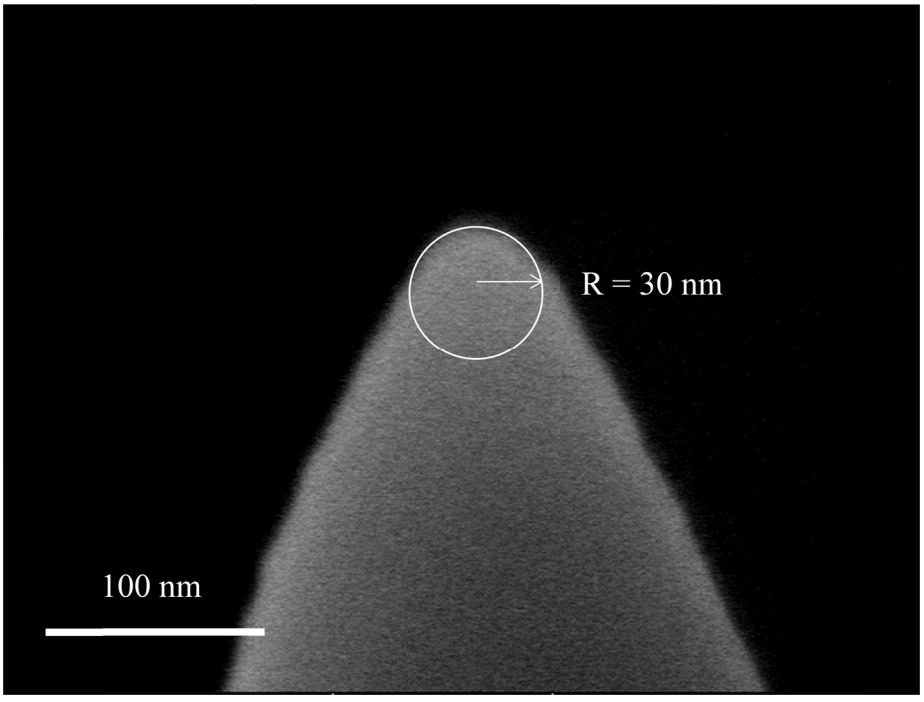

Fig. S1. High-resolution SEM image of the AFM tip (radius = 30 nm)

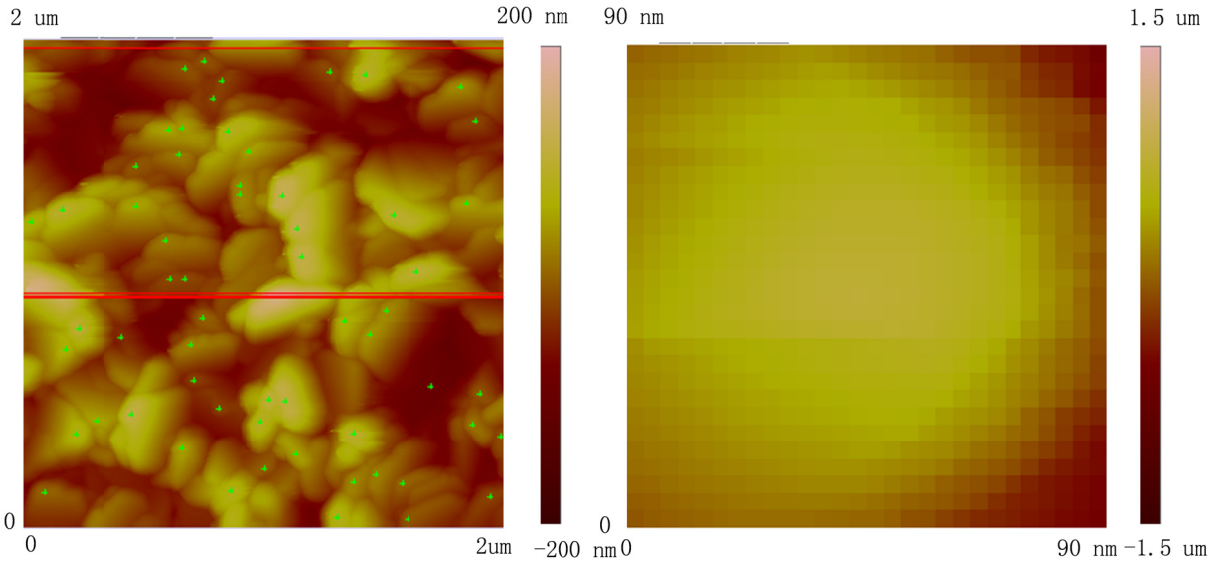

Fig. S2. Left: Height image of RS-12M standard sample showing local maxima used to determine the radius of the tip. Right: Resulting tip shape.

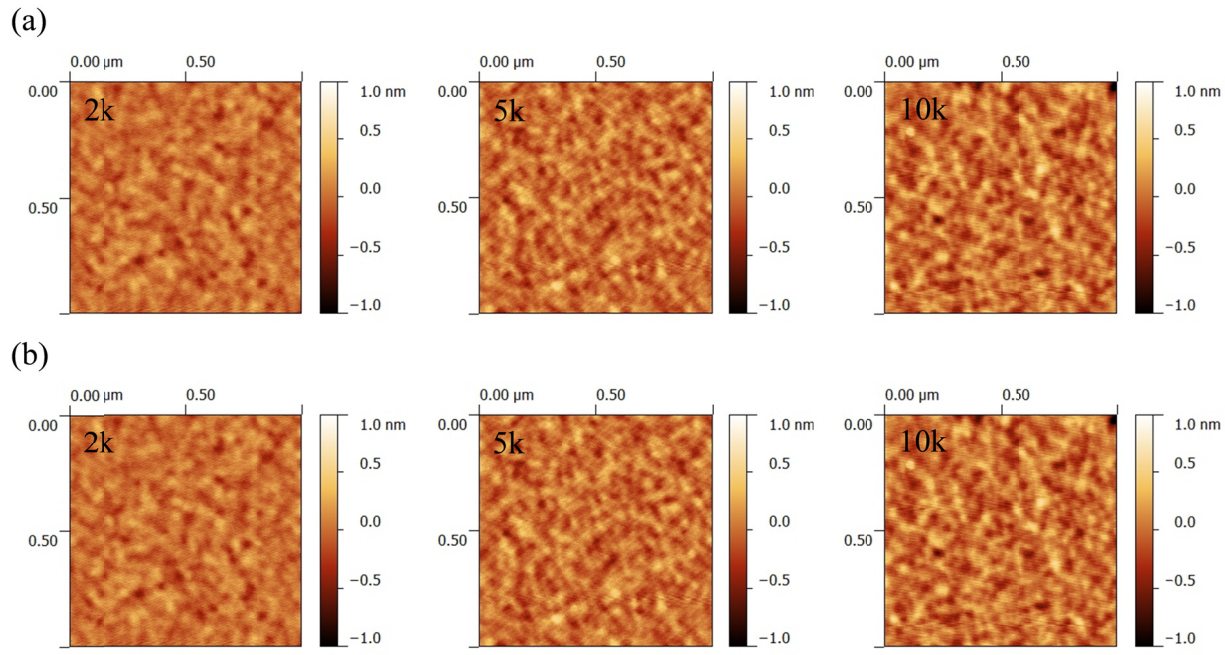

Fig. S3. (a) AFM topographic images of wet PEG films (on silicon substrate) of varying molecular weight (2k, 5k, 10k). (b) Surface reconstruction image of (a) after tip blind estimation using Gwyddion software free online.

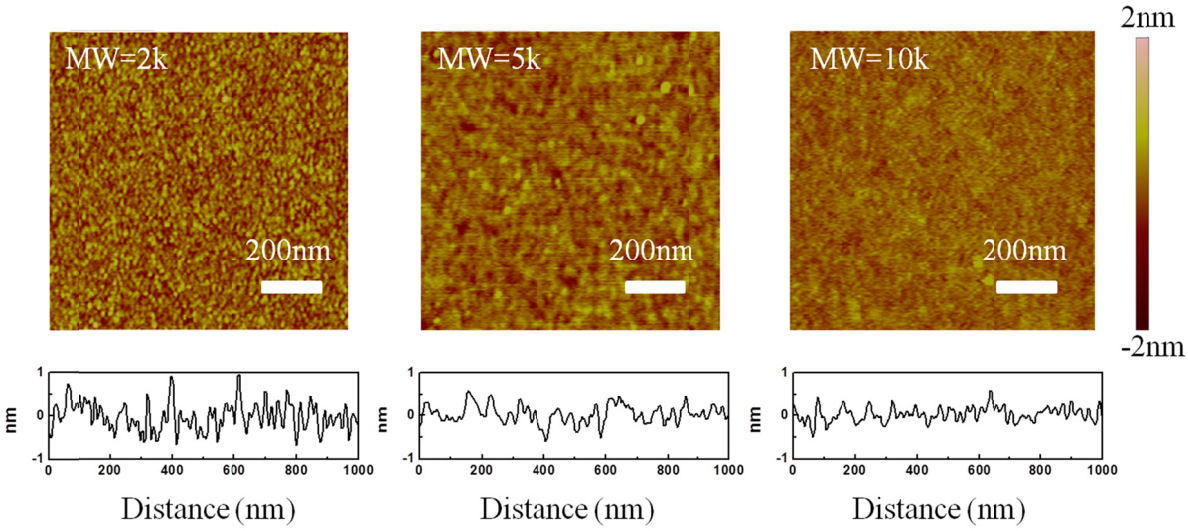

Fig. S4. AFM topographic images of dry PEG films (on silicon substrate) of varying molecular weight (2k, 5k, 10k) along with line profiles across the film.

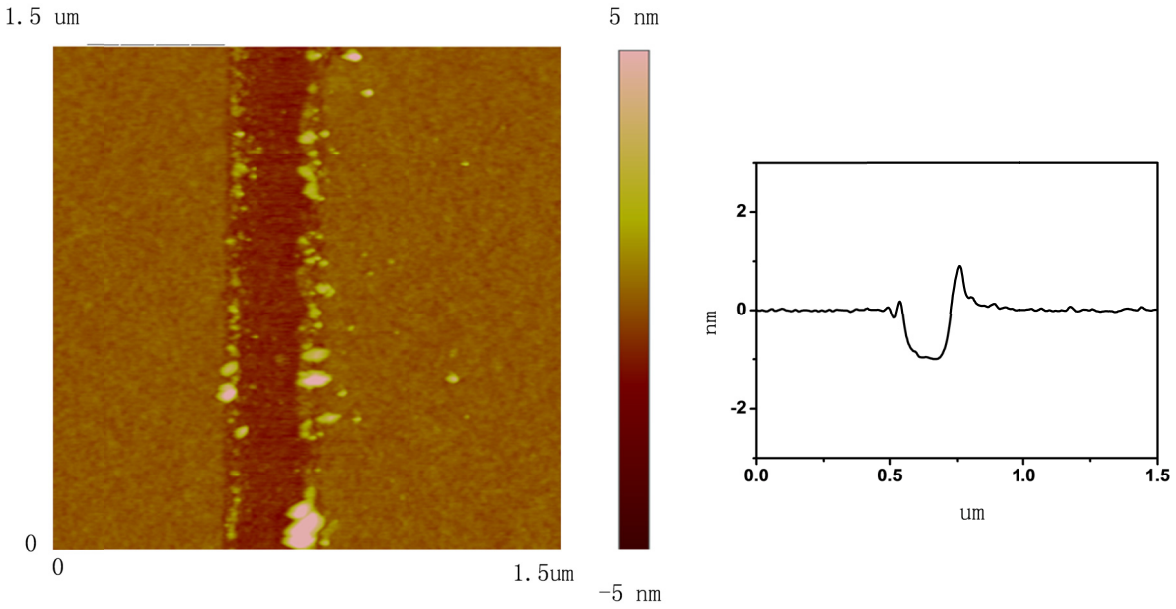

Fig. S5. Left: Image of an oxide layer after an oxygen plasma treatment. Right: Line trace showing the cross-sectional profile of the image.

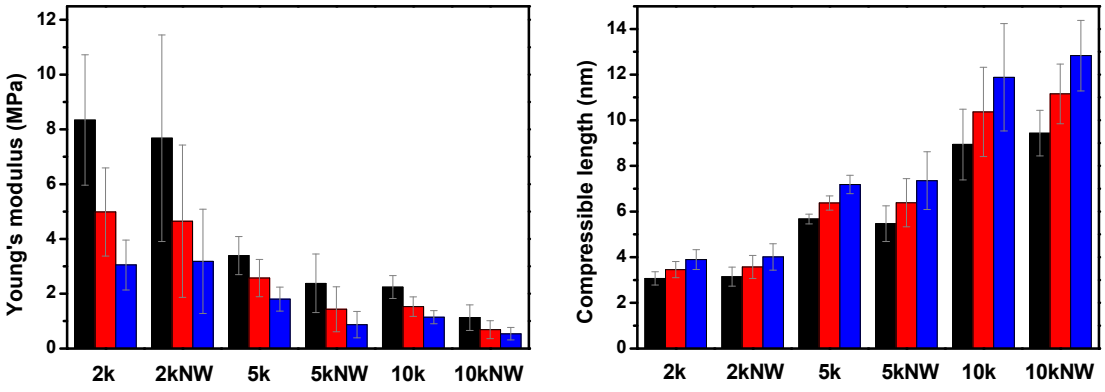

Fig. S6. Left: Young's modulus of the film. Right: Compressible length of the film. (Red: the normal contact point; Black: 15% of the compressible length before the contact point; Blue: 15% of the compressible length after the contact point)