Supporting Information

Attachment of Polybutadienes to Hydrogen-Terminated Silicon and Post-Derivatization of the Adsorbed Species

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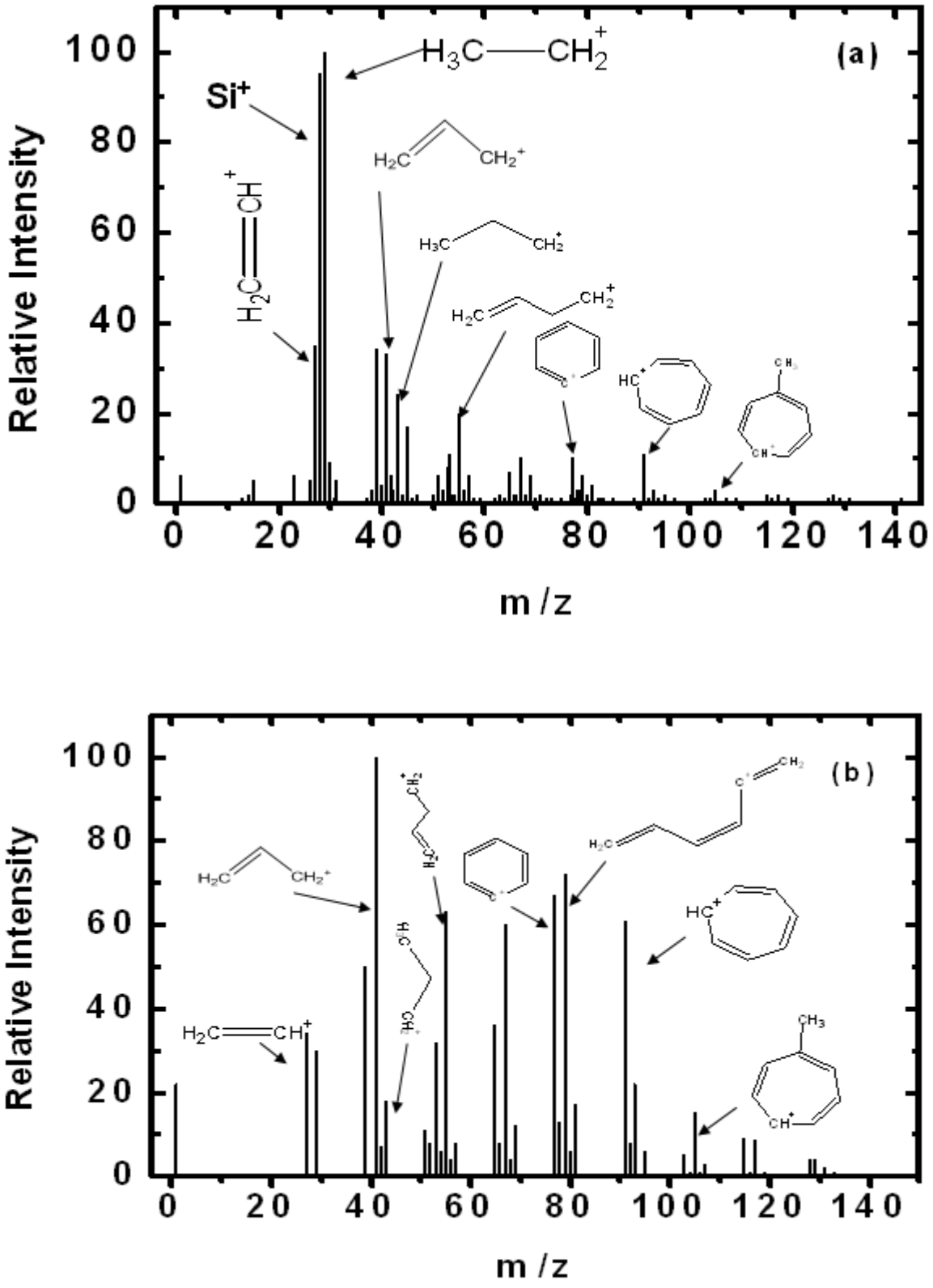


Figure S1. (a) Positive ion mode ToF-SIMS spectrum of Si(111)-H reacted with 33% PBd in mesitylene solution, (b) PBd Reference spectrum.

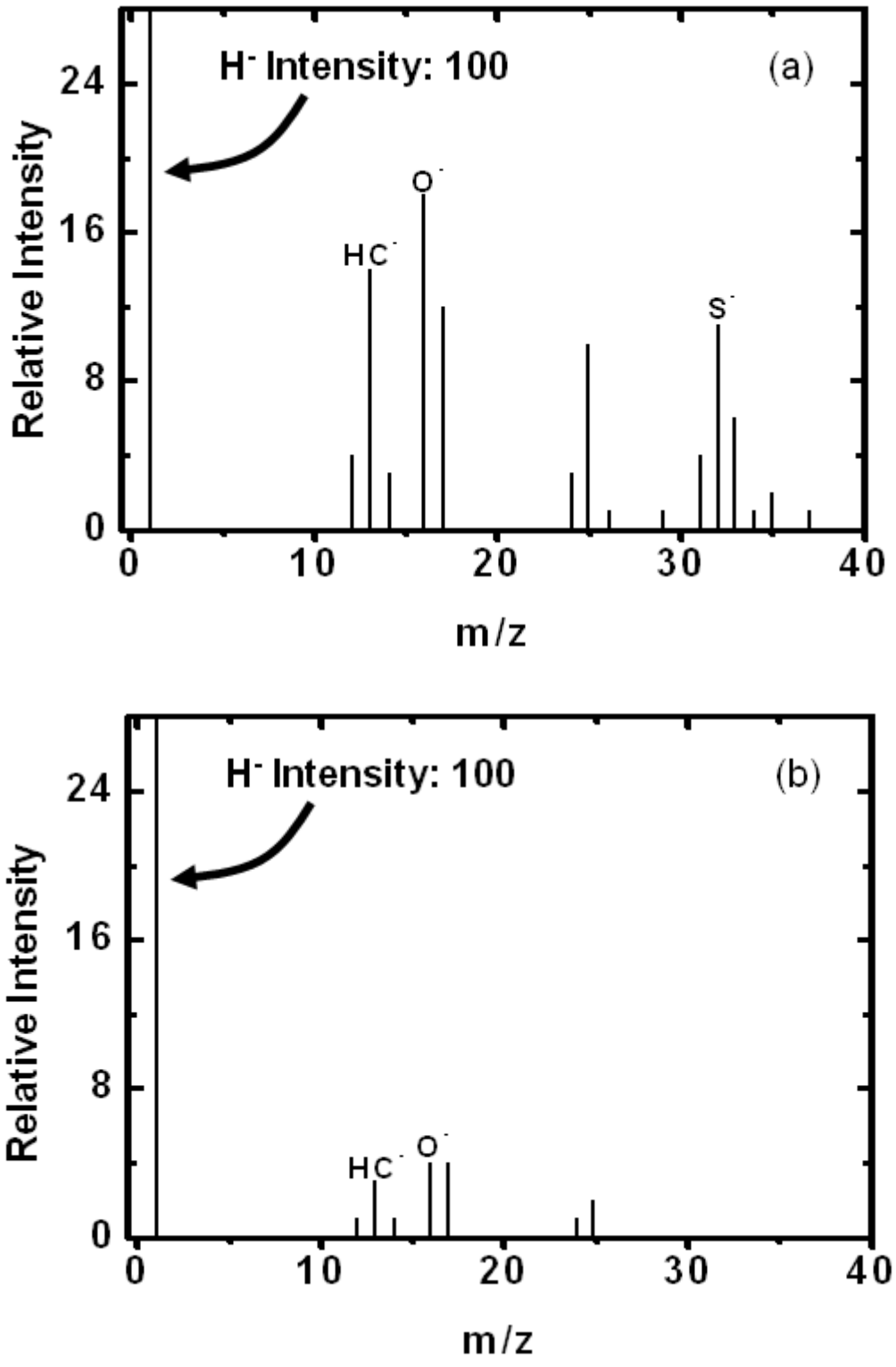
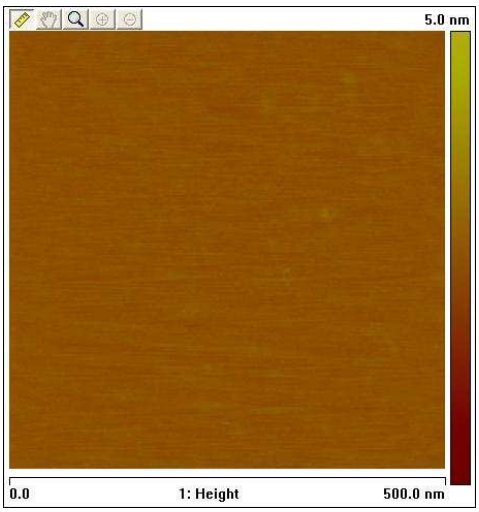


Figure S2. Negative ion mode ToF-SIMS spectra of Si(111)-H reacted with (a) '*Methyl-3*-mercaptopropionate' functionalized (44%) PBd, (b) 25% w/w PBd. The spectra were scaled so the intensities of the H^- signals were 100.



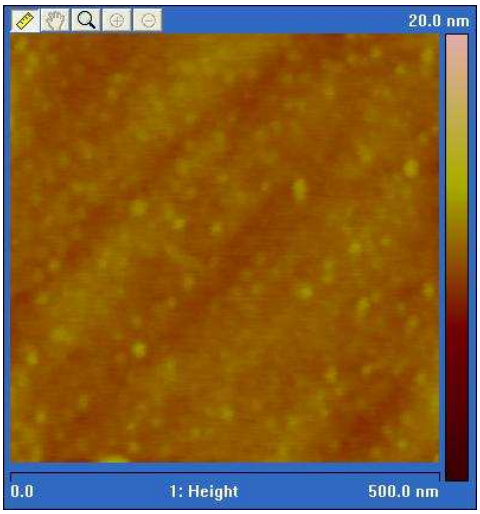


Figure S3. AFM images of Si(111)-H surface (left, white frame) compared to 44% methyl-3-mercaptopropionate functionalized PBd (right, blue frame). The spots are attributed to methyl-3-mercaptopropionate chemisorbed at the surface.

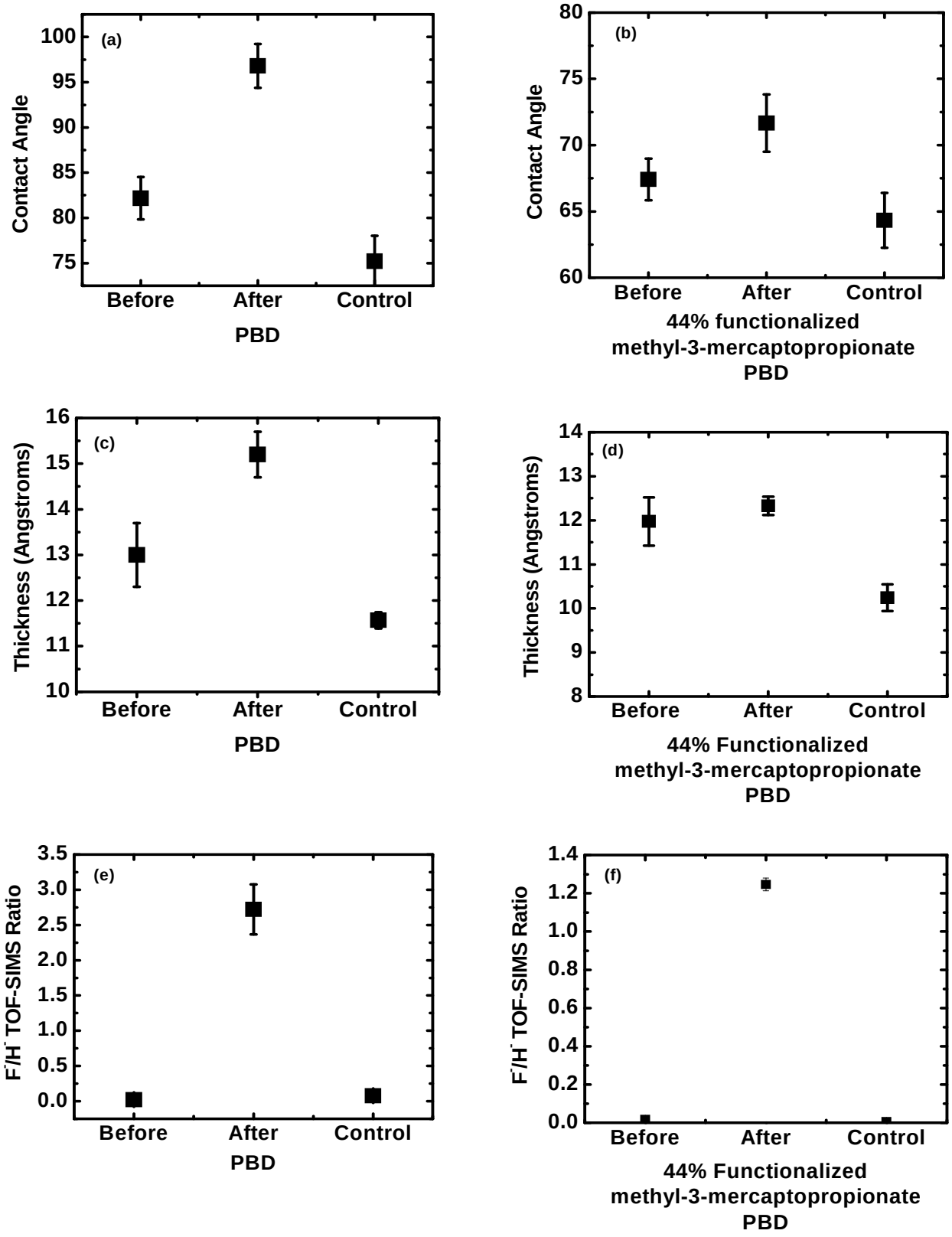
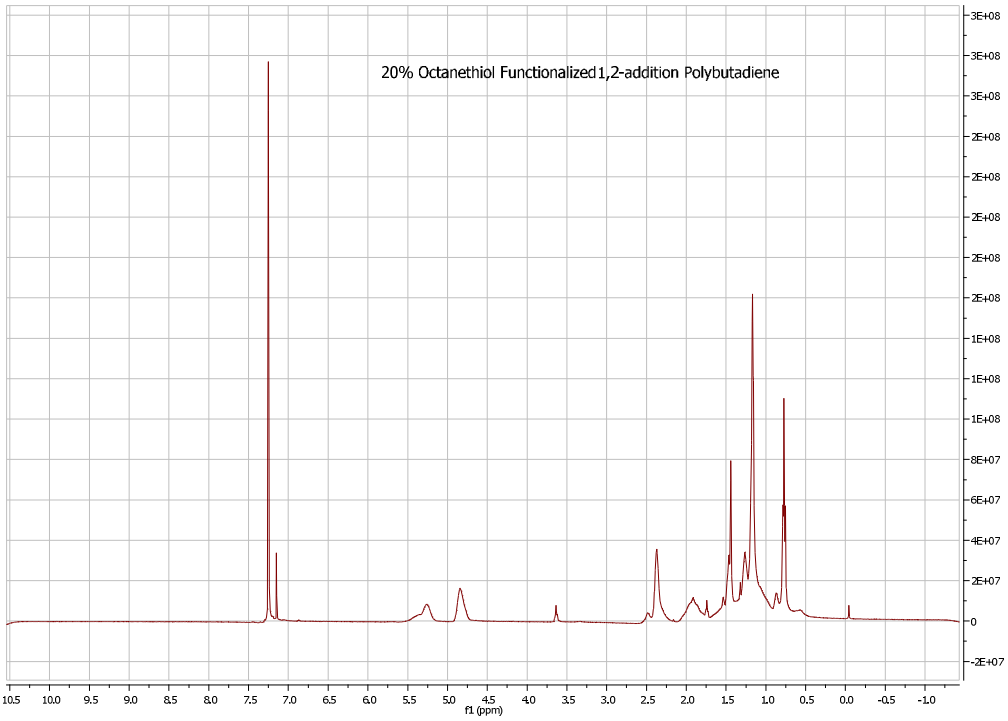


Figure S4. PBd/functionalized PBd coated Si(111)-H before and after reaction with a fluorinated thiol. (a-b) Contact angle goniometry, (c-d) Optical ellipsometry, (e-f) ToF-SIMS negative mode.



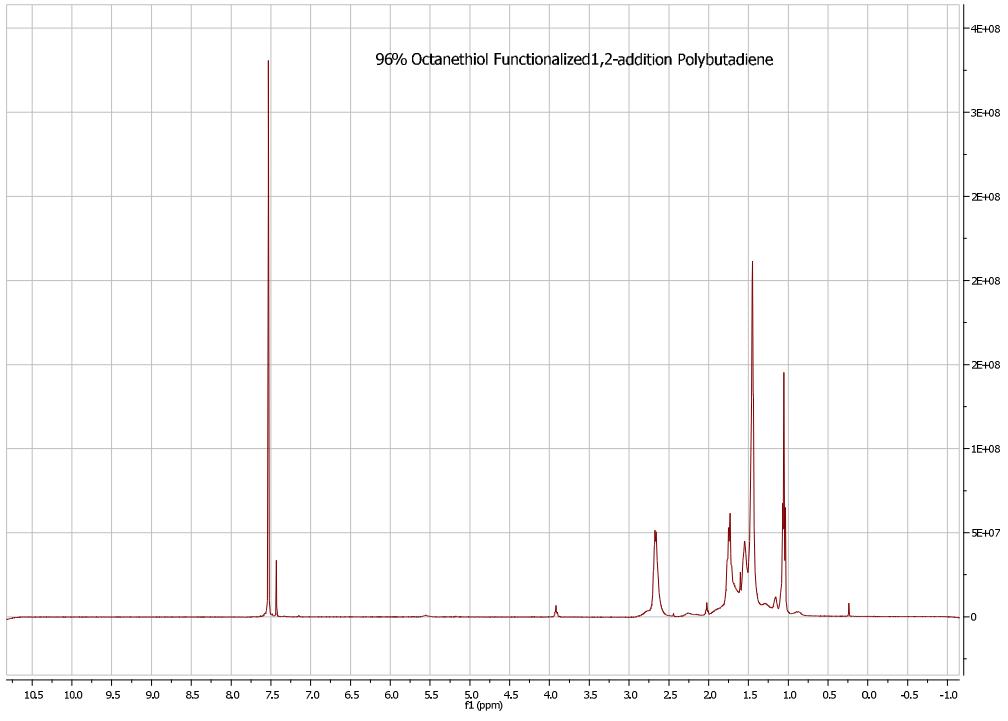


Figure S5. A comparison of the 1H NMR signals of the C=C-H signal at ~5.0 ppm of 20% octanethiol-functionalized PBd (above) and 96% functionalized PBd (below).

Expected Surface Thickness of PBd - Basic Polymer theory states that the size of a polymer coiled in solution is approximately equal to the square root of the number of monomer units (mers) times the length of each monomer unit. The polybutadiene used was approximately 3200-3500 MW, the mass of one mer is about 52 AU, which would mean there are about 64 mers per polymer. The length of the polymer in solution would be the square root of 64, or about 8 mers. The length of the mer across the 1,2-addition bonds is approximately 2.5 Å (the length of two carbon-carbon bonds). The length of the individual mer times the number of mers in the polymer length should be about 20 Å in solution, which is very close to the ellipsometry value we obtain for the surfaces. The surface thickness results concur reasonably well with this very basic level of theory.