Table S1 Values of total (γ_{lv}), dispersion (γ_{lv}^{d}), polar (γ_{lv}^{p}), hydrogen bond donating (γ_{lv}^{+}), and hydrogen bond accepting (γ_{lv}^{-}) surface energies in mN/m

(Data reproduced from Reference 1)

Liquid	γ_{lv}	γ_{lv}^{d}	γ_{lv}^{p}	γ_{lv}^{+}	γ_{lv}^{-}
Water	72.1	21.1	51.0	25.5	25.5
Ethylene Glycol	47.7	28.7	19.0	1.9	47.0
Dimethyl Sulfoxide	44.0	36.0	8.0	0.5	32.0
Diiodomethane	50.8	50.8	0.0	0.0	0.0
Rapeseed Oil	35.5	35.5	0.0	0.0	0.0
Hexadecane	27.8	27.8	0.0	0.0	0.0

Table S2 Measured advancing contact angles θ_{adv} of six probe liquids on the 36 test surfaces[a]

Sample	Water	Ethylene Glycol	Dimethyl Sulfoxide	Diiodomethane	Rapeseed Oil	Hexadecane
PC	87.2 ± 1.3	75.7 ± 3.8	60.5 ± 6.0	40.8 ± 4.1	44.2 ± 6.2	24.0 ± 6.7
Fluoroalkylsilane[b]	123.0 ± 1.9	101.7 ± 1.5	109.8 ± 0.6	106.6 ± 2.4	84.2 ± 2.0	78.4 ± 3.1
Teflon AF-2400	125.4 ± 1.1	103.5 ± 1.1	101.3 ± 1.1	104.4 ± 1.7	82.3 ± 2.5	69.7 ± 2.1
PMMA	77.3 ± 1.3	65.4 ± 3.0	47.5 ± 3.2	45.8 ± 1.9	29.7 ± 6.5	16.1 ± 3.0
99/1 PMMA/ Fluorodecyl POSS	100.4 ± 3.1	68.3 ± 2.1	55.3 ± 3.9	64.9 ± 5.4	38.9 ± 5.8	41.5 ± 2.5
97/3 PMMA/ Fluorodecyl POSS	108.6 ± 0.5	83.3 ± 5.6	73.2 ± 1.7	93.4 ± 2.1	71.1 ± 4.1	61.3 ± 4.5
95/5 PMMA/ Fluorodecyl POSS	116.6 ± 1.2	93.6 ± 4.4	89.3 ± 2.3	94.6 ± 3.8	69.9 ± 6.1	66.4 ± 7.4
90/10 PMMA/ Fluorodecyl POSS	123.5 ± 1.0	105.5 ± 0.4	102.0 ± 1.2	102.3 ± 1.4	83.6 ± 3.2	79.8 ± 1.9
80/20 PMMA/ Fluorodecyl POSS	123.9 ± 0.3	104.5 ± 0.5	102.5 ± 0.8	102.5 ± 1.4	86.6 ± 1.2	79.9 ± 1.5
70/30 PMMA/ Fluorodecyl POSS	124.0 ± 0.4	105.0 ± 1.1	104.4 ± 0.4	103.6 ± 0.8	87.3 ± 1.4	79.0 ± 0.6
50/50 PMMA/ Fluorodecyl POSS	124.2 ± 1.1	104.7 ± 1.4	105.4 ± 0.9	104.8 ± 1.5	87.5 ± 2.2	79.4 ± 1.6
PEMA	85.5 ± 1.4	65.3 ± 2.6	54.1 ± 2.4	57.4 ± 2.8	38.3 ± 1.7	16.6 ± 2.8
99/1 PEMA/ Fluorodecyl POSS	99.7 ± 1.5	71.8 ± 6.0	69.8 ± 1.8	70.6 ± 2.0	53.0 ± 2.9	47.5 ± 1.2
97/3 PEMA/ Fluorodecyl POSS	117.3 ± 0.8	92.9 ± 6.1	94.0 ± 1.5	85.7 ± 6.3	81.4 ± 0.7	75.4 ± 0.9
95/5 PEMA/ Fluorodecyl POSS	122.0 ± 0.6	102.8 ± 3.8	101.5 ± 1.7	98.5 ± 4.9	81.9 ± 2.8	80.6 ± 1.1
90/10 PEMA/ Fluorodecyl POSS	123.1 ± 0.4	107.3 ± 1.3	102.1 ± 1.0	102.4 ± 0.7	85.5 ± 1.7	79.5 ± 0.9
80/20 PEMA/ Fluorodecyl POSS	124.3 ± 0.5	104.6 ± 1.6	103.0 ± 1.0	103.2 ± 0.8	85.7 ± 3.4	79.6 ± 1.4
70/30 PEMA/ Fluorodecyl POSS	124.7 ± 0.4	104.5 ± 1.8	102.5 ± 1.2	103.4 ± 0.8	86.5 ± 1.9	77.1 ± 1.8
50/50 PEMA/ Fluorodecyl POSS	126.4 ± 0.5	106.1 ± 1.2	106.0 ± 0.6	104.2 ± 2.1	87.1 ± 1.8	79.3 ± 1.2
PBMA	93.7 ± 0.9	71.5 ± 2.1	69.5 ± 1.6	70.8 ± 5.5	41.8 ± 1.7	22.1 ± 3.0
99/1 PBMA/ Fluorodecyl POSS	103.0 ± 2.1	75.4 ± 2.1	71.6 ± 1.6	97.3 ± 3.6	49.1 ± 4.9	41.5 ± 1.0
97/3 PBMA/ Fluorodecyl POSS	117.2 ± 1.0	95.9 ± 1.5	94.7 ± 1.3	c	63.2 ± 3.8	60.9 ± 3.9
95/5 PBMA/ Fluorodecyl POSS	123.5 ± 0.4	102.4 ± 2.2	102.6 ± 0.7	c	81.8 ± 2.1	76.5 ± 2.8

90/10 PBMA/ Fluorodecyl POSS	121.9 ± 1.1	105.4 ± 1.0	102.5 ± 0.9	c	83.0 ± 3.7	79.4 ± 1.8
80/20 PBMA/ Fluorodecyl POSS	122.0 ± 1.4	105.5 ± 1.3	101.3 ± 1.2	c	86.8 ± 1.5	79.4 ± 1.8
70/30 PBMA/ Fluorodecyl POSS	124.8 ± 1.2	105.7 ± 1.0	102.4 ± 1.3	c	86.8 ± 0.8	78.4 ± 1.5
50/50 PBMA/ Fluorodecyl POSS	127.7 ± 0.7	107.4 ± 0.6	103.2 ± 1.3	104.4 ± 1.7	87.9 ± 1.9	79.0 ± 1.7
Tecnofolon	118.3 ± 1.1	97.0 ± 0.8	92.1 ± 2.2	97.8 ± 1.0	78.5 ± 1.5	66.9 ± 2.3
99/1 Tecnoflon/ Fluorodecyl POSS	126.7 ± 1.3	115.0 ± 3.2	114.0 ± 2.9	112.4 ± 4.9	95.8 ± 4.0	88.5 ± 2.1
97/3 Tecnoflon/ Fluorodecyl POSS	125.7 ± 0.6	113.7 ± 4.0	108.3 ± 2.2	107.3 ± 0.8	97.9 ± 2.5	81.6 ± 0.4
95/5 Tecnoflon/ Fluorodecyl POSS	125.0 ± 1.1	107.2 ± 1.5	106.5 ± 2.6	105.3 ± 1.6	89.2 ± 2.6	82.1 ± 0.8
90/10 Tecnoflon/ Fluorodecyl POSS	124.6 ± 0.4	107.6 ± 0.7	108.2 ± 1.0	106.7 ± 1.5	89.5 ± 2.1	81.3 ± 1.1
80/20 Tecnoflon/ Fluorodecyl POSS	124.3 ± 0.4	109.1 ± 3.0	103.9 ± 2.6	106.5 ± 2.3	91.2 ± 3.4	80.7 ± 0.9
70/30 Tecnoflon/ Fluorodecyl POSS	123.7 ± 0.4	104.8 ± 0.6	101.8 ± 0.8	105.0 ± 1.0	87.5 ± 1.6	80.4 ± 1.3
50/50 Tecnoflon/ Fluorodecyl POSS	126.3 ± 0.6	107.3 ± 0.9	102.9 ± 1.0	105.2 ± 0.8	89.5 ± 1.7	80.7 ± 0.7
Fluorodecyl POSS	125.4 ± 0.6	107.5 ± 1.0	104.5 ± 1.5	106.2 ± 1.9	89.4 ± 1.6	81.2 ± 0.8

[a] Reported uncertainties are standard deviations from eight measured contact angle values.

[b] 1H,1H,2H,2H-perfluorodecyltrichlorosilane.

[c] Measurement of angles is difficult because drops do not advance smoothly. See Fig. S3 for details.

Table S3 Measured receding contact angles θ_{rec} of various probe liquids on the 36 test surfaces[a]

Sample	Water	Ethylene Glycol	Dimethyl Sulfoxide	Diiodomethane	Rapeseed Oil	Hexadecane
PC	72.3 ± 1.2	46.9 ± 4.1	30.1 ± 3.5	15.3 ± 1.9	21.3 ± 2.0	< 10
Fluoroalkylsilane[b]	93.0 ± 3.1	74.5 ± 3.6	66.2 ± 1.4	73.2 ± 2.7	48.9 ± 3.5	53.1 ± 2.1
Teflon AF-2400	113.4 ± 0.8	93.9 ± 2.2	89.3 ± 1.0	88.4 ± 2.3	58.6 ± 3.7	58.1 ± 2.8
PMMA	61.2 ± 1.4	43.0 ± 3.0	31.2 ± 3.0	22.2 ± 1.3	15.3 ± 2.3	< 10
99/1 PMMA/ Fluorodecyl POSS	63.9 ± 1.0	48.7 ± 2.0	31.3 ± 2.1	23.5 ± 3.3	15.8 ± 1.3	16.1 ± 2.3
97/3 PMMA/ Fluorodecyl POSS	74.7 ± 1.2	52.9 ± 3.8	33.0 ± 5.2	26.3 ± 2.8	30.1 ± 5.0	22.5 ± 2.8
95/5 PMMA/ Fluorodecyl POSS	91.2 ± 2.0	67.4 ± 3.5	36.6 ± 3.4	35.0 ± 3.5	34.4 ± 3.6	31.6 ± 5.9
90/10 PMMA/ Fluorodecyl POSS	115.2 ± 0.8	92.1 ± 1.8	54.4 ± 1.8	68.8 ± 8.6	49.8 ± 6.0	46.2 ± 5.8
80/20 PMMA/ Fluorodecyl POSS	118.1 ± 0.8	99.2 ± 0.8	84.6 ± 0.8	88.2 ± 2.7	79.0 ± 1.8	74.6 ± 2.0
70/30 PMMA/ Fluorodecyl POSS	119.8 ± 0.8	98.4 ± 1.8	89.0 ± 1.1	87.4 ± 3.0	75.8 ± 3.5	73.4 ± 2.9
50/50 PMMA/ Fluorodecyl POSS	118.3 ± 1.9	97.8 ± 3.1	90.7 ± 1.0	90.8 ± 4.0	78.4 ± 1.4	73.1 ± 0.9
PEMA	70.5 ± 1.9	52.4 ± 2.7	38.8 ± 1.5	19.5 ± 4.1	17.5 ± 1.2	< 10
99/1 PEMA/ Fluorodecyl POSS	75.9 ± 1.0	53.4 ± 2.5	39.4 ± 2.5	23.2 ± 2.5	28.0 ± 2.8	19.9 ± 2.2
97/3 PEMA/ Fluorodecyl POSS	98.0 ± 2.0	65.1 ± 3.4	47.8 ± 4.0	34.4 ± 3.7	46.4 ± 7.0	21.4 ± 2.1
95/5 PEMA/ Fluorodecyl POSS	112.7 ± 2.4	75.1 ± 8.8	65.8 ± 4.6	44.3 ± 7.6	55.2 ± 12.3	51.5 ± 6.2
90/10 PEMA/ Fluorodecyl POSS	119.3 ± 1.7	90.3 ± 3.3	84.9 ± 1.8	77.8 ± 4.1	70.2 ± 4.7	73.9 ± 1.6
80/20 PEMA/ Fluorodecyl POSS	117.9 ± 2.1	98.3 ± 2.3	88.3 ± 1.0	91.8 ± 2.5	77.7 ± 1.3	73.3 ± 1.6
70/30 PEMA/ Fluorodecyl POSS	117.7 ± 1.3	98.0 ± 2.5	87.1 ± 2.1	83.3 ± 1.8	78.8 ± 0.6	71.3 ± 3.7
50/50 PEMA/ Fluorodecyl POSS	117.8 ± 0.5	96.1 ± 2.0	91.8 ± 1.0	86.4 ± 1.4	75.7 ± 1.9	70.7 ± 2.1
PBMA	77.7 ± 0.8	59.7 ± 1.0	58.2 ± 1.5	25.7 ± 6.4	18.0 ± 1.8	13.4 ± 2.3
99/1 PBMA/ Fluorodecyl POSS	79.9 ± 2.0	66.8 ± 2.3	53.1 ± 2.4	23.5 ± 4.9	25.7 ± 5.1	23.2 ± 2.7
97/3 PBMA/ Fluorodecyl POSS	99.5 ± 1.6	82.0 ± 2.7	69.5 ± 1.0	34.1 ± 4.8	26.5 ± 6.7	36.1 ± 2.7
95/5 PBMA/ Fluorodecyl POSS	116.4 ± 1.4	90.7 ± 5.0	77.8 ± 3.2	35.1 ± 11.2	43.8 ± 5.8	40.9 ± 5.7

90/10 PBMA/ Fluorodecyl POSS	119.1 ± 1.0	90.6 ± 2.5	84.2 ± 1.2	38.3 ± 6.8	51.5 ± 6.8	53.9 ± 3.3
80/20 PBMA/ Fluorodecyl POSS	119.1 ± 1.0	97.3 ± 1.0	85.3 ± 2.0	40.1 ± 7.3	73.3 ± 0.8	70.5 ± 1.9
70/30 PBMA/ Fluorodecyl POSS	117.0 ± 0.9	98.3 ± 0.8	87.3 ± 2.2	49.9 ± 5.4	72.3 ± 4.9	73.2 ± 1.0
50/50 PBMA/ Fluorodecyl POSS	117.0 ± 0.6	96.0 ± 1.5	86.6 ± 2.0	75.2 ± 3.6	75.6 ± 1.8	70.6 ± 2.6
Tecnofolon	77.1 ± 2.4	58.2 ± 1.3	41.9 ± 2.0	54.3 ± 1.2	41.4 ± 2.4	36.9 ± 4.8
99/1 Tecnoflon/ Fluorodecyl POSS	85.1 ± 2.6	66.4 ± 1.7	49.0 ± 2.3	66.2 ± 2.5	64.1 ± 1.7	66.8 ± 3.8
97/3 Tecnoflon/ Fluorodecyl POSS	90.8 ± 1.8	67.4 ± 2.9	62.3 ± 5.6	76.2 ± 1.3	69.6 ± 2.2	70.2 ± 2.2
95/5 Tecnoflon/ Fluorodecyl POSS	94.9 ± 3.4	75.6 ± 2.1	71.6 ± 4.0	79.1 ± 2.2	74.4 ± 1.8	73.5 ± 2.4
90/10 Tecnoflon/ Fluorodecyl POSS	97.1 ± 2.3	83.5 ± 2.4	69.4 ± 4.2	80.3 ± 4.0	75.2 ± 3.9	74.4 ± 2.1
80/20 Tecnoflon/ Fluorodecyl POSS	106.3 ± 2.9	85.5 ± 2.1	77.3 ± 4.2	87.7 ± 1.5	77.4 ± 3.6	76.5 ± 0.7
70/30 Tecnoflon/ Fluorodecyl POSS	111.5 ± 1.6	89.6 ± 2.9	79.5 ± 2.4	88.1 ± 2.1	77.3 ± 3.5	74.6 ± 2.9
50/50 Tecnoflon/ Fluorodecyl POSS	114.1 ± 0.9	86.5 ± 1.6	80.0 ± 1.3	88.7 ± 2.0	73.4 ± 3.4	71.5 ± 1.6
Fluorodecyl POSS	111.9 ± 0.8	87.9 ± 2.1	82.4 ± 1.2	87.0 ± 2.6	71.0 ± 4.1	72.5 ± 2.1

[a] Reported uncertainties are standard deviations from eight measured contact angle values.

[b] 1H,1H,2H,2H-perfluorodecyltrichlorosilane.

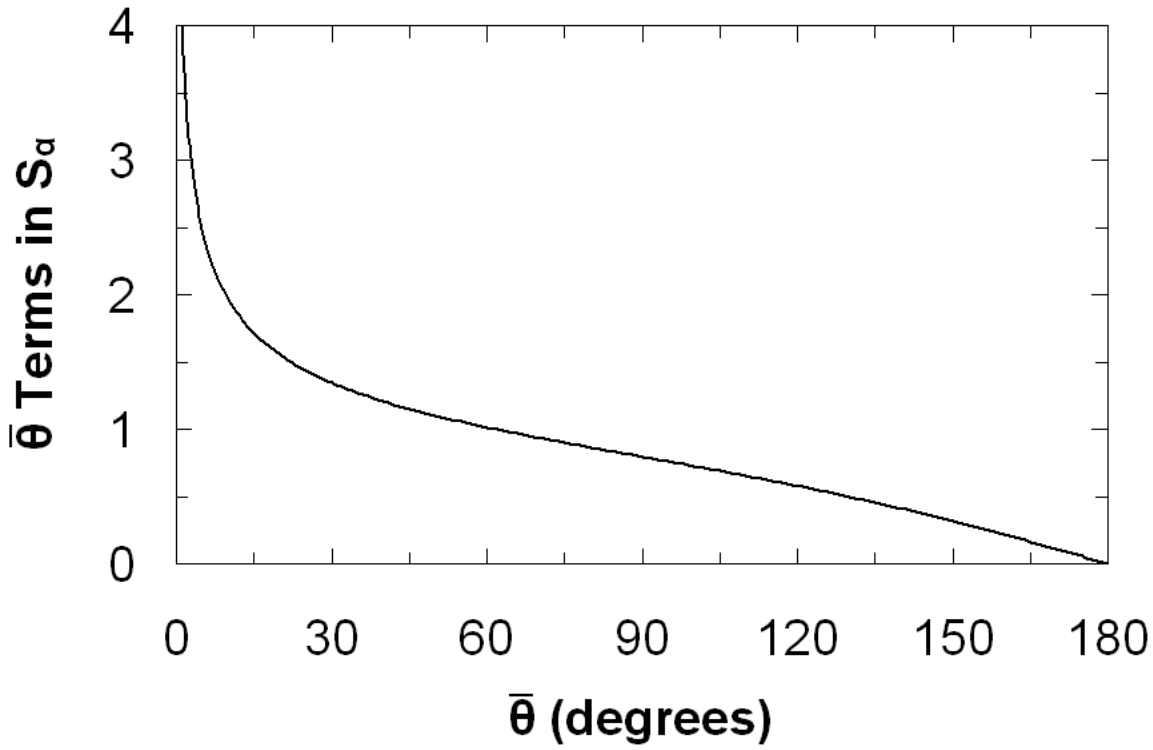

Fig. S1. Plot of the terms in S_α that contain $\bar{\theta}$ and influence the drop width w (i.e., $\frac{\sin\bar{\theta}}{\left(2-3\cos\bar{\theta}+\cos^3\bar{\theta}\right)^{1/3}}$) as a function of $\bar{\theta}$.

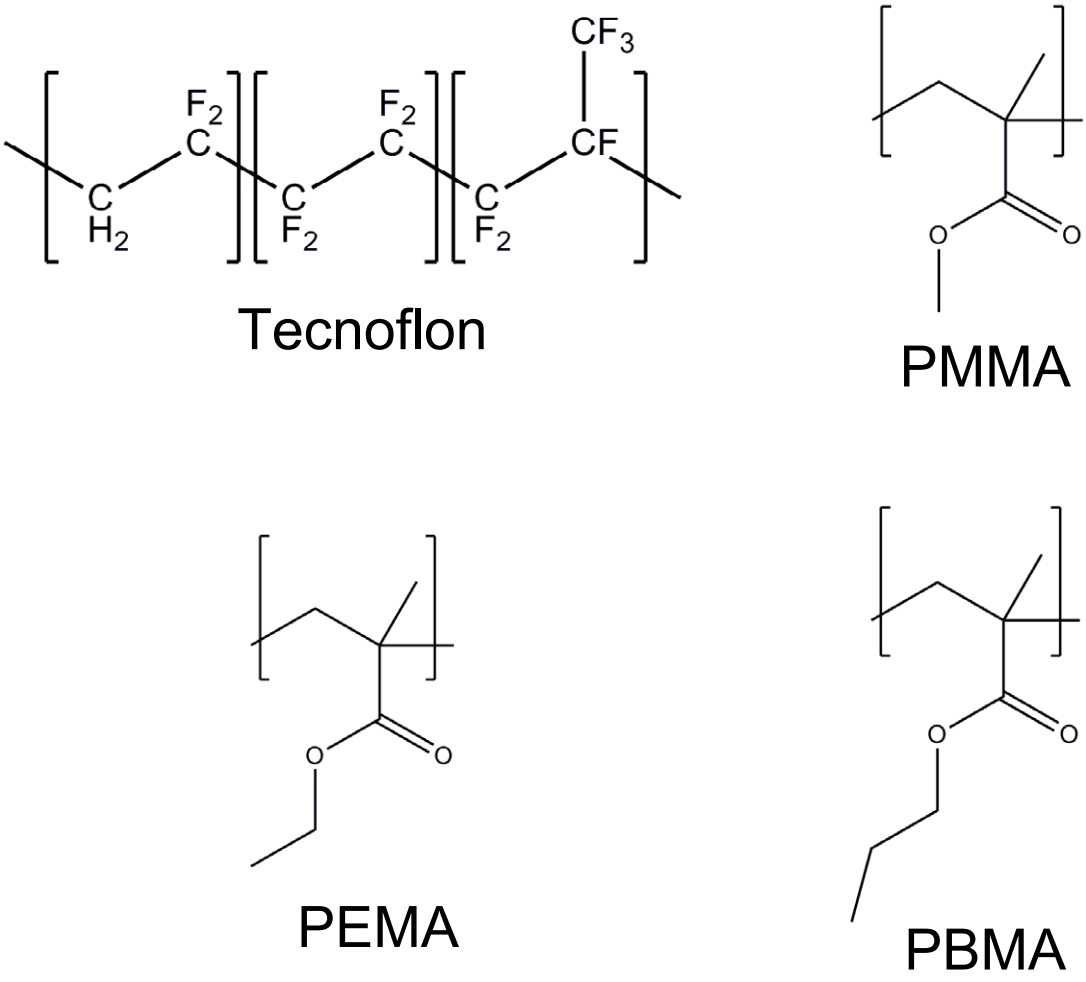

Fig. S2. Chemical structures of the polymers that are blended with fluorodecyl POSS in this work..

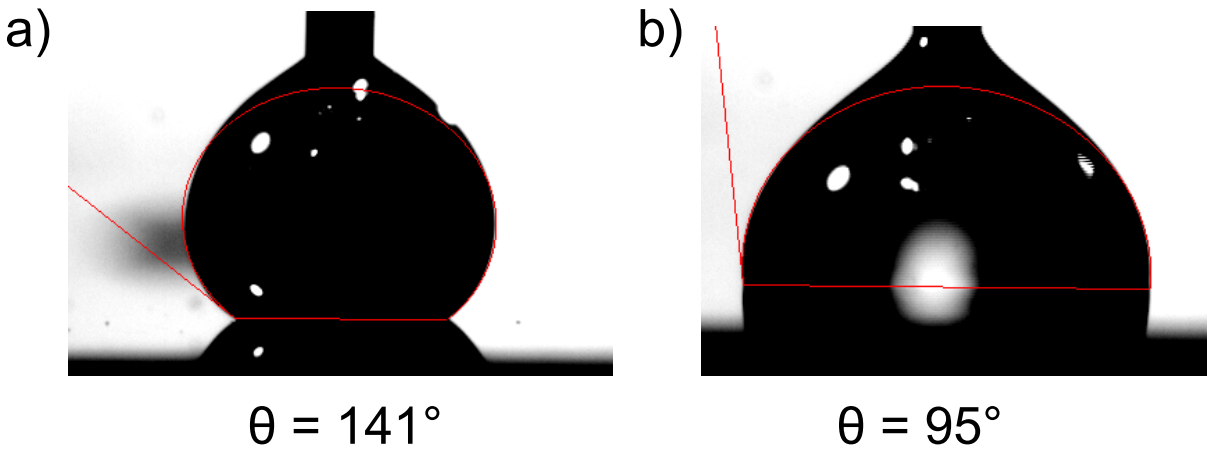

Fig. S3. Photographs of diiodomethane droplets on 80/20 PBMA/ fluorodecyl POSS. As liquid is syringed into the droplet, the contact angle approaches 141°, as illustrated in (a). When sufficient liquid is added, the drop quickly advances forward to a contact angle of 95°, as shown in (b). This slip/ stick motion is repeated as additional dioodomethane is syringed into the droplet. Advancing contact angle data from droplets advancing by this slip/ stick mechanism are not used to evaluate solid surface energy.

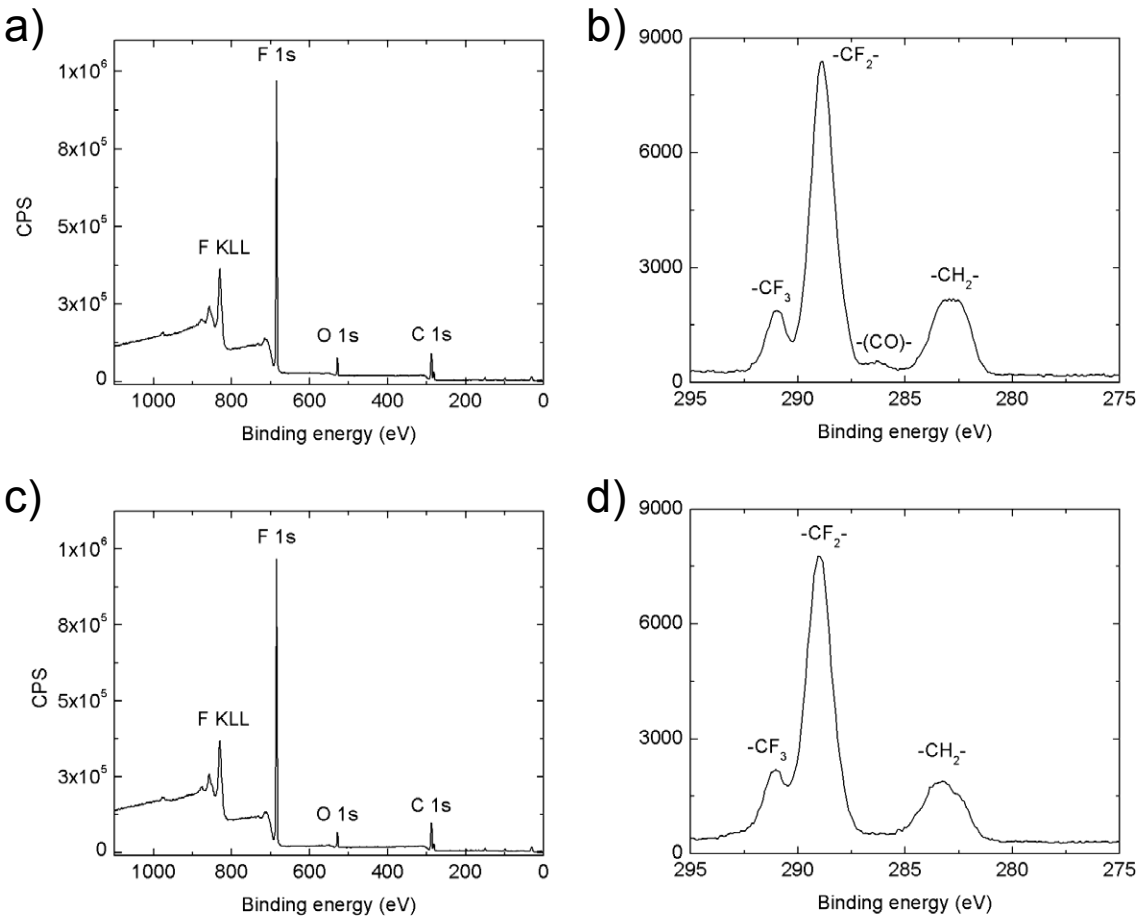

Fig. S4. XPS data acquired for spin-cast films of (a,b) 80/20 PEMA/ fluorodecyl POSS and (c,d) 80/20 Tecnoflon/ fluorodecyl POSS. Survey spectra for the (a) 80/20 PEMA/ fluorodecyl POSS and (c) 80/20 Tecnoflon/ fluorodecyl POSS in which the elemental peaks corresponding to F, O, and C are labeled. High resolution carbon 1s spectra for the (b) 80/20 PEMA/ fluorodecyl POSS and (d) 80/20 Tecnoflon/ fluorodecyl POSS wherein peaks corresponding to various carbon moieties located near the surface are labeled.

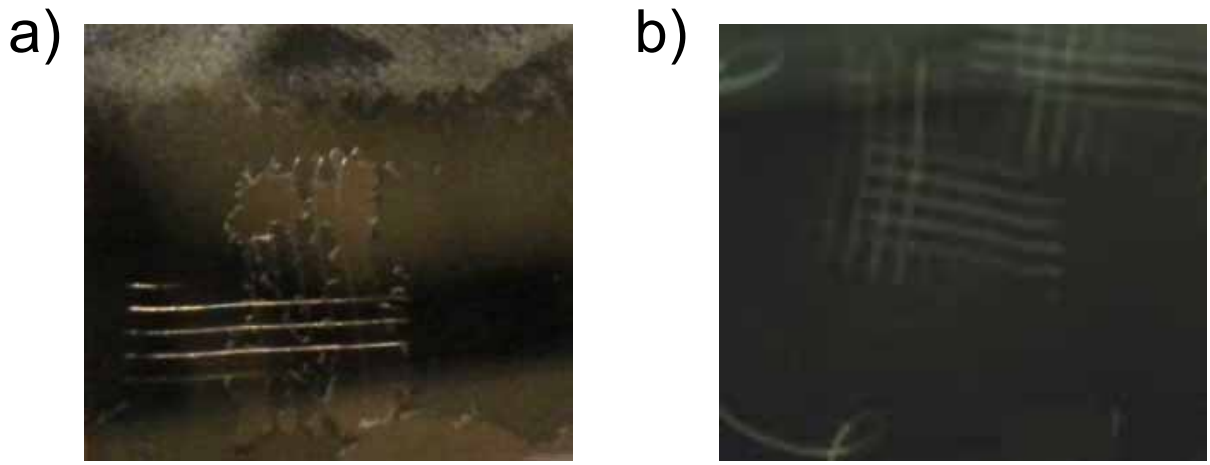

Fig. S5. Photographs of silicon wafers that were coated and subjected to a cross-cut adhesion test: (a) 80/20 Tecnoflon/ fluorodecyl POSS and (b) 80/20 PEMA/ fluorodecyl POSS. The ASTM categorizations of strengths of adhesion of these coatings are (a) 1B (low adhesion) and (b) 5B (highest adhesion).

References

(1) Chaudhury, M. K. Interfacial interaction between low-energy surfaces. *Materials Science & Engineering R-Reports* **1996**, *16*, 97-159.