Electronic Supplementary Material (ESI) for Analytical Methods.

Silicon cantilever functionalization for cellulose-specific chemical force imaging of switchgrass

Supplementary Information

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Supplementary Information

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S1. Contact Angle Measurements

Contact angle measurement is a standard method for evaluation of surface coating by measurement of changes in hydrophobicity relative to unmodified control samples of the same material. The observed contact angle between a droplet of liquid and a solid surface is proportional to the adhesion energy per unit area between the solid and liquid surfaces. A Tantec CAM Plus contact angle meter (ChemInstruments, Inc., Fairfield, Ohio) was used to measure contact angles of droplets of purified distilled water on the tested surfaces. The functionalization of the silicon chips used for the model surfaces were tested with 20 µl droplets of distilled water.

Table S1. Contact angles of functionalized silicon chips (averaged for N =2).

Functionalization	Contact Angle (degrees)
Control (none)	110
Bis-Hydroxyethylaminopropyl trimethoxysilane	146.7
Triethoxysilane-N-propyl gluconamide	149.3
3-mercaptopropyl trimethoxysilane	156.7

For the measurements on functionalized cantilevers, 1 µL of distilled water was deposited at the base of the cantilever chip (Fig. S1). Results from three cantilevers were averaged.

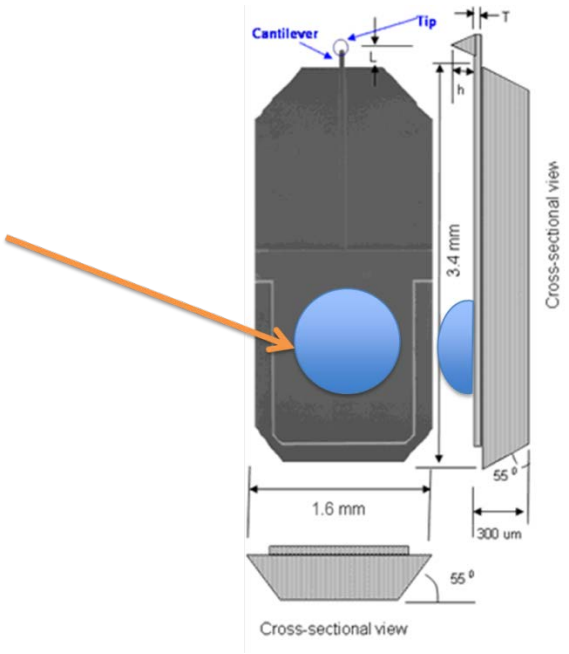

Figure S1. Schematic depiction of placement of water droplet on a cantilever for determination of contact angle as a measure of functionalization.

Table S2. Contact angles of functionalized silicon cantilevers.

Functionalization	Avg. Contact Angle (degree)
Ethanol Control	198
10% APTES in ethanol	198
10% trimethoxysilyl gluconamide in ethanol	189

Table S3. Contact angles of functionalized silicon nitride cantilevers.

Functionalization	Avg. Contact Angle (degree)
Ethanol Control	197
10% APTES in ethanol	191
10% trimethoxysilyl gluconamide in ethanol	185