

## Supplementary Information for

### Sustainable Design of Non-Fluorinated yet Oleophobic Fibrous Surfaces

Sadaf Shabanian<sup>1,2</sup>, Xiaoxiao Zhao<sup>1</sup>, Samuel Au<sup>1</sup>, Nicole Furtak<sup>1</sup>, Kevin Golovin<sup>1,3</sup>

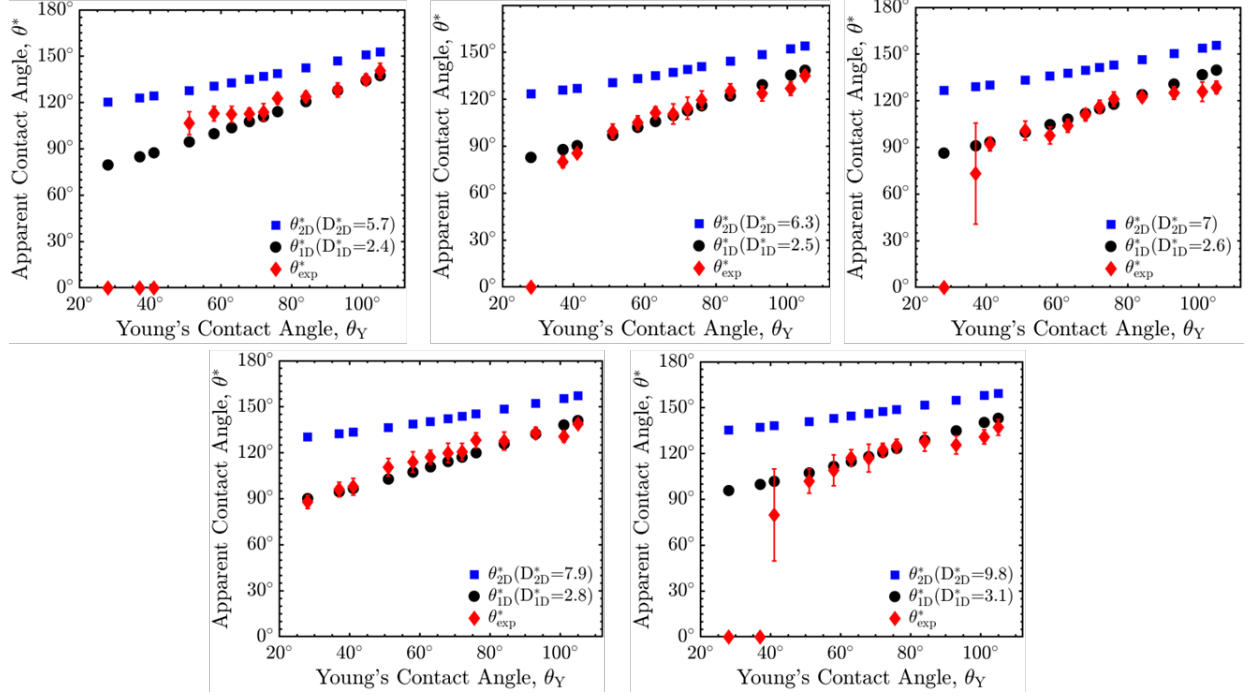
<sup>1</sup>Department of Mechanical & Industrial Engineering, University of Toronto, Toronto, ON, M5S 3G8, Canada

<sup>2</sup>School of Engineering, University of British Columbia, Kelowna, BC, V1V 1V7, Canada

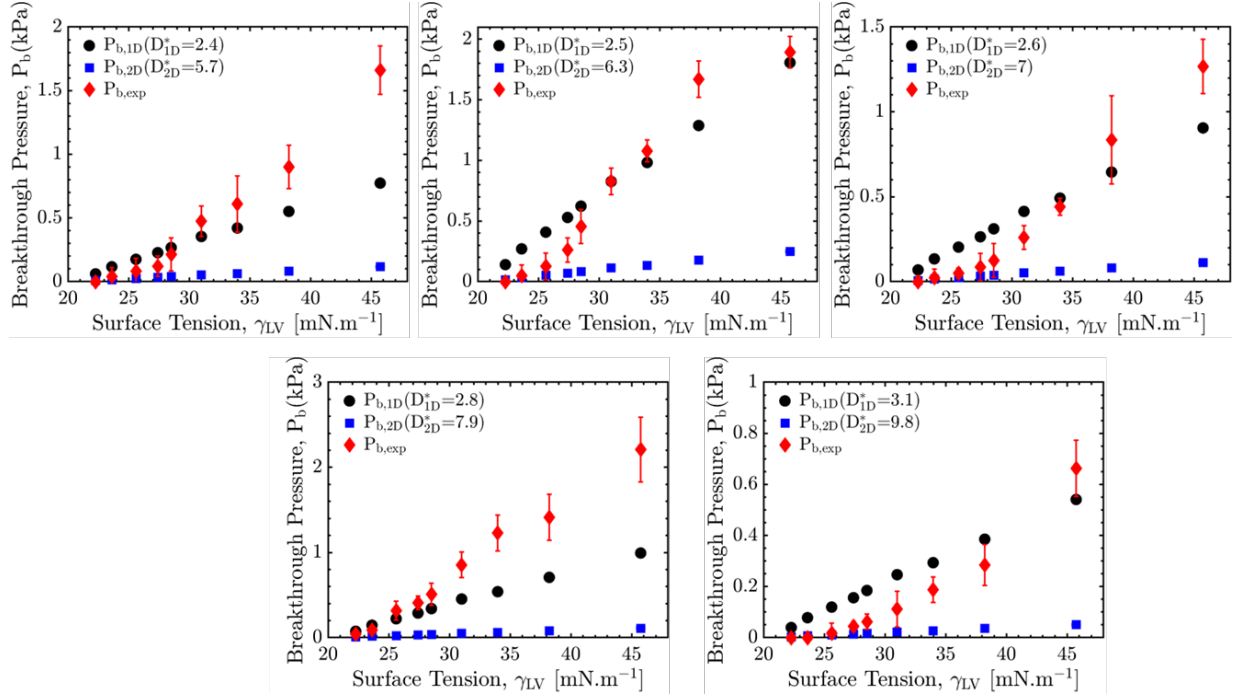
<sup>3</sup>Department of Materials Science & Engineering, University of Toronto, Toronto, ON, M5S 3G8, Canada

**Table S1.** The XPS results of the surface elemental composition of PDMS brush-coated stainless-steel mesh and the atomic ratios of SiO<sub>2</sub>(CH<sub>3</sub>)<sub>2</sub>/ SiO<sub>2</sub> and C/Si.

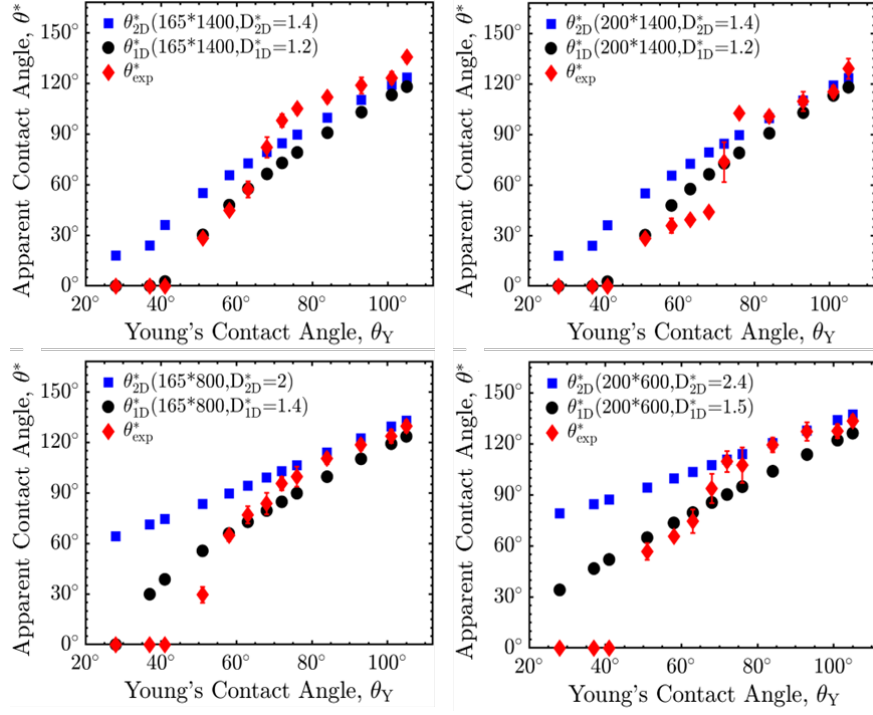
SiO <sub>2</sub> (%)	SiO <sub>2</sub> (CH <sub>3</sub> ) <sub>2</sub> (%)	O (%)	C (%)	Cr (%)	SiO <sub>2</sub> (CH <sub>3</sub> ) <sub>2</sub> / SiO <sub>2</sub>	C/Si
1.87	21.43	25.71	47.38	3.61	11.5	2.3



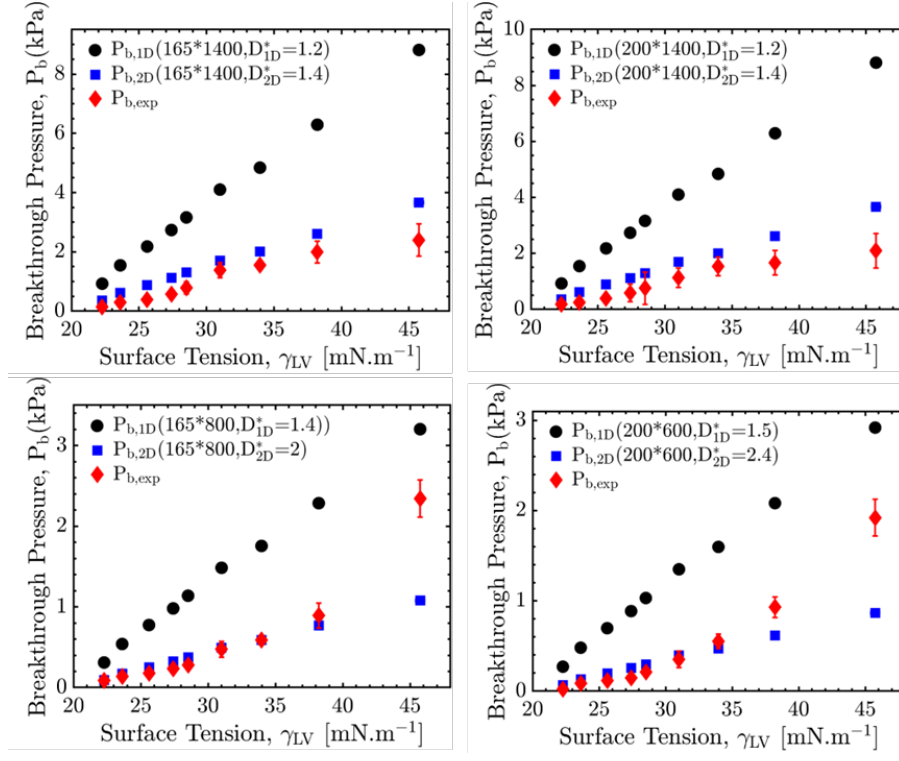
**Figure S1.** Experimental apparent contact angle,  $\theta^*$ , of droplets of ethanol-water mixtures on the monofilament twill weave fabrics with  $D_{1D}^*$  values ranging from 2.4 – 3.1, in comparison with the calculated values of  $\theta_{1D}^*$  and  $\theta_{2D}^*$  from Eq. 1 in the main manuscript.



**Figure S2.** The breakthrough pressure of a column of ethanol-water mixtures with surface tensions ranging from 45.7 to 22.3 mN.m<sup>-1</sup> on the monofilament twill weave fabrics with  $D_{1D}^*$  values ranging from 2.4 – 3.1.



**Figure S3.** Experimental apparent contact angles,  $\theta^*$ , of droplets of ethanol-water mixtures on the monofilament Dutch weave fabrics with  $D_{1D}^*$  ranging from 1.2 – 1.5, in comparison with the calculated values of  $\theta_{1D}^*$  and  $\theta_{2D}^*$  from Eq. 1 in the main manuscript.



**Figure S4.** The breakthrough pressure of a column of ethanol-water mixtures with surface tensions ranging from 45.7 to 22.3 mN.m<sup>-1</sup> on the monofilament Dutch-weave fabrics with  $D_{1D}^*$  values ranging from 1.2 – 1.5.