Electronic Supporting Information

Bio-inspired liquid transport via elastocapillary interaction of a thin mem-brane with liquid meniscus

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Supplementary Movies:

Movie S1: Shows that the membrane deformation is more pronounced when the membrane thickness decreases for the soft wedge case.

Movie S2: Shows that the meniscus velocity decreases with increase in the waiting time due to higher contact angle at longer waiting time for the soft wedge case.

Movie S3: Shows the motion of the advancing liquid meniscus on a flat membrane at different time instants.

Movie S4: Shows that meniscus motion follows Washburn regime for an initial length and for the remaining length, slow wicking was observed

Movie S5: Elastocapillary flow on a flat membrane with liquid feeding at a constant flow rate exceeding the elastocapillary flow rate.

Supplementary Figures:

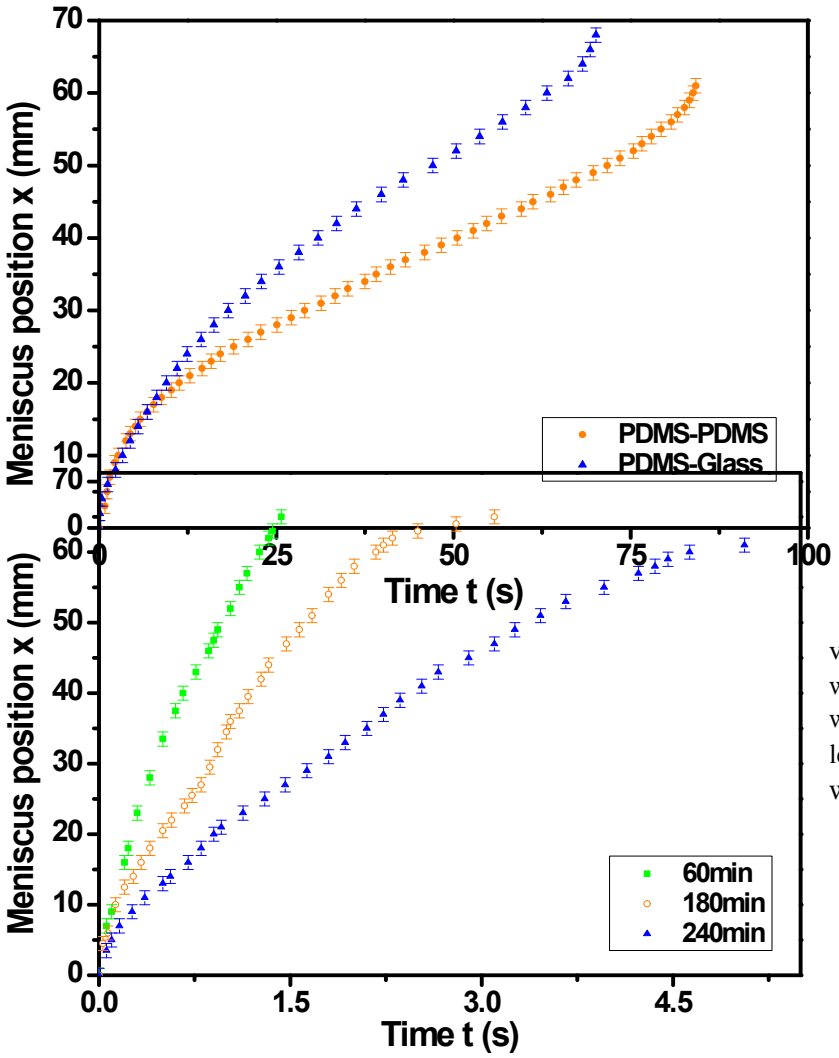

Fig. S1 The variation of the meniscus position x with time t for PDMS membrane of width 3 mm, thickness 80 µm and length ~60 mm using olive oil with PDMS and glass substrates.

Fig. S2 The variation of the meniscus position x with time t for PDMS membrane of width 3 mm, thickness 67 µm and length ~60 mm using DI water with glass substrate after different waiting times of air plasma exposure.

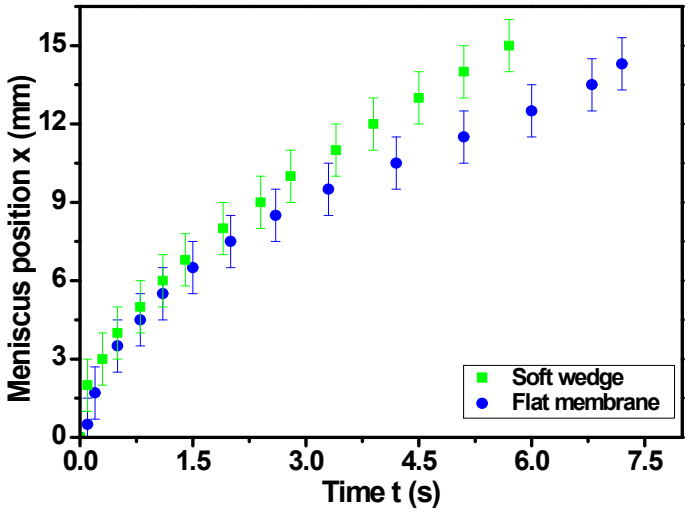

Fig. S3 The variation of the meniscus position x with time t for PDMS membrane of width 4 mm, thickness 5 µm and length 20 mm using olive oil in soft wedge and flat membrane.

Table. SI.1: Properties of the membrane used for comparison of modified Washburn constant from elastocapillary experiments and theoretical model prediction

β	Thickness (m)	Width (m)	Experiment W_m ($mm/s^{1/2}$)	Theory W_m ($mm/s^{1/2}$)	Error (%)
3.15	0.00008	0.00195	0.48	0.61	26.8
9.6	0.00008	0.00315	0.56	0.61	9.7
11.5	0.000069	0.002	0.55	0.54	1.4
11.75	0.0001	0.0041	0.53	0.65	22.7
16	0.00009	0.004	0.59	0.47	19.7