

Electronic Supplementary Information (ESI) for Lab on a Chip

Robust chemical bonding of PMMA microfluidic devices to porous PETE membranes for reliable cytotoxicity tests of drugs

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SUPPLEMENTARY FIGURE LEGENDS

Fig. S1 Contact angle measurement of bare, air plasma – treated, and GLYMO-treated PETE membranes, respectively.

Fig. S2 (A) The XPS spectra of the GLYMO - treated PETE membrane. (B) The SiC bond is derived from the GLYMO molecules. (C), (D) The C 1s and O 1s spectra showing multiple peaks represent polyester on the PETE surface. (E) The Si 2s and Si 2p peaks appeared because of the silane coupling reaction.

Fig. S3 The SEM images of the bare PETE membranes, air plasma-treated, and GLYMO - treated PETE membranes. Scale bar, 100 μm in (A), (D), (G); 50 μm in (B), (E), (H); 10 μm in (C), (F), (I).

Fig. S4 (A) A rhodamine B dye solution was perfused through the PDMS-PETE and PMMA-PETE channel for 4 to 16 hours. The fluorescence images taken from the top view depict diffusion of the dye solution from the channel to the substrates at each different time point. Neither PMMA nor PETE absorbed the rhodamine B dye while the PDMS significantly absorbed the dye. The fluorescence intensity of the PETE membrane (bottom panel of A) was measured after washing out the channel with a buffer solution to remove residual rhodamine B dyes in the channel. Scale bar: 200 μm . (B) The quantitative comparison of rhodamine B absorbed into the PDMS channel, the PMMA channel, and the PETE membrane, respectively.

Fig. S5 HUVEC cells were cultured in the PMMA device for 5 days. Hoechst (left) and PI (right) staining of the cells on day 5 showing high cell viability ($>97.46 \pm 1.03\%$). Scale bar: 100 μm .

Figure S1

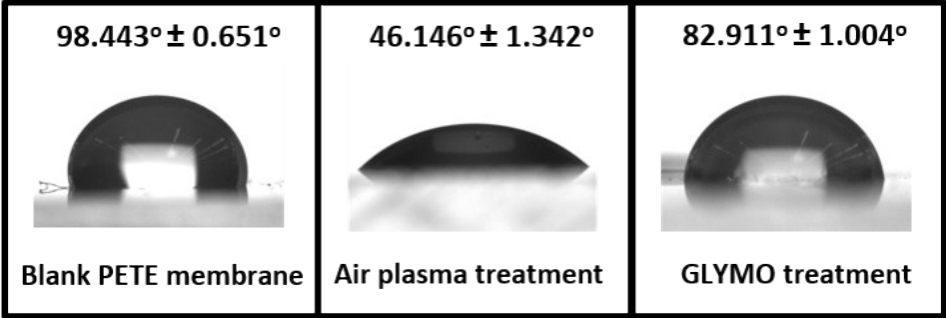


Figure S2

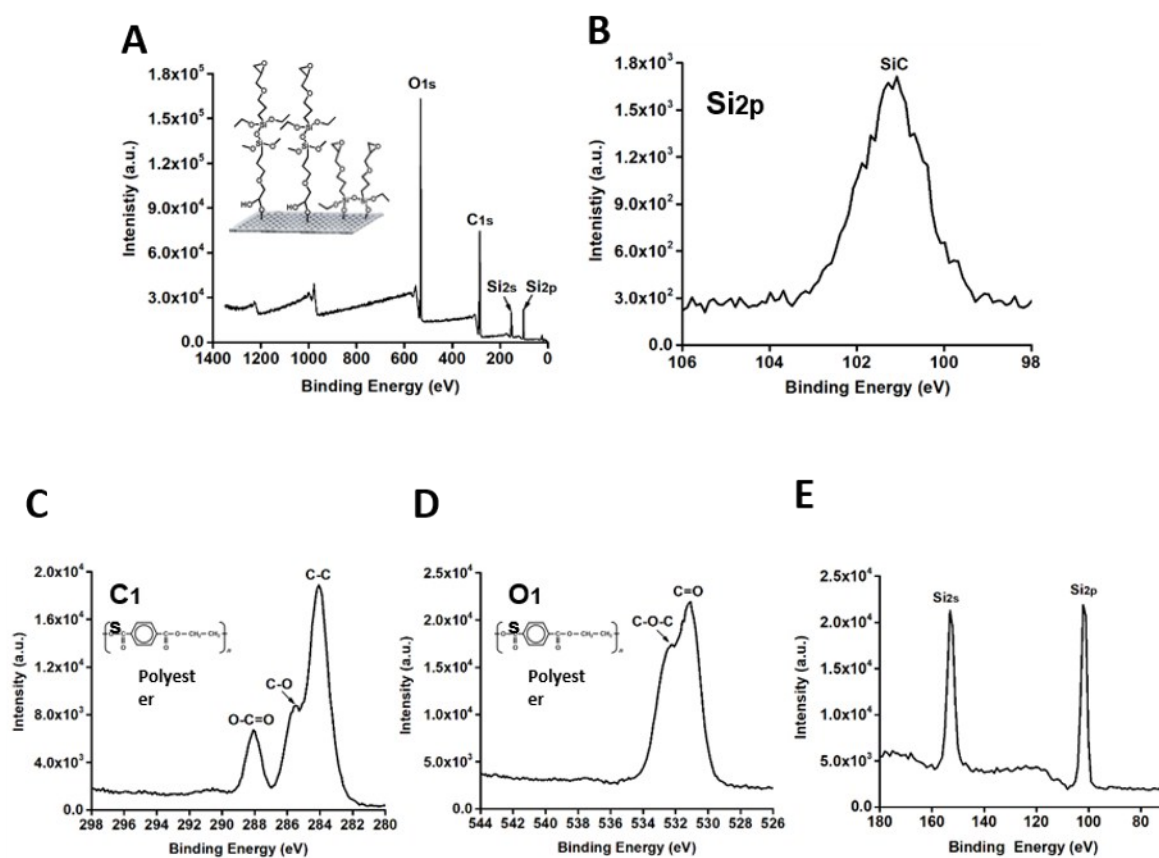


Figure S3

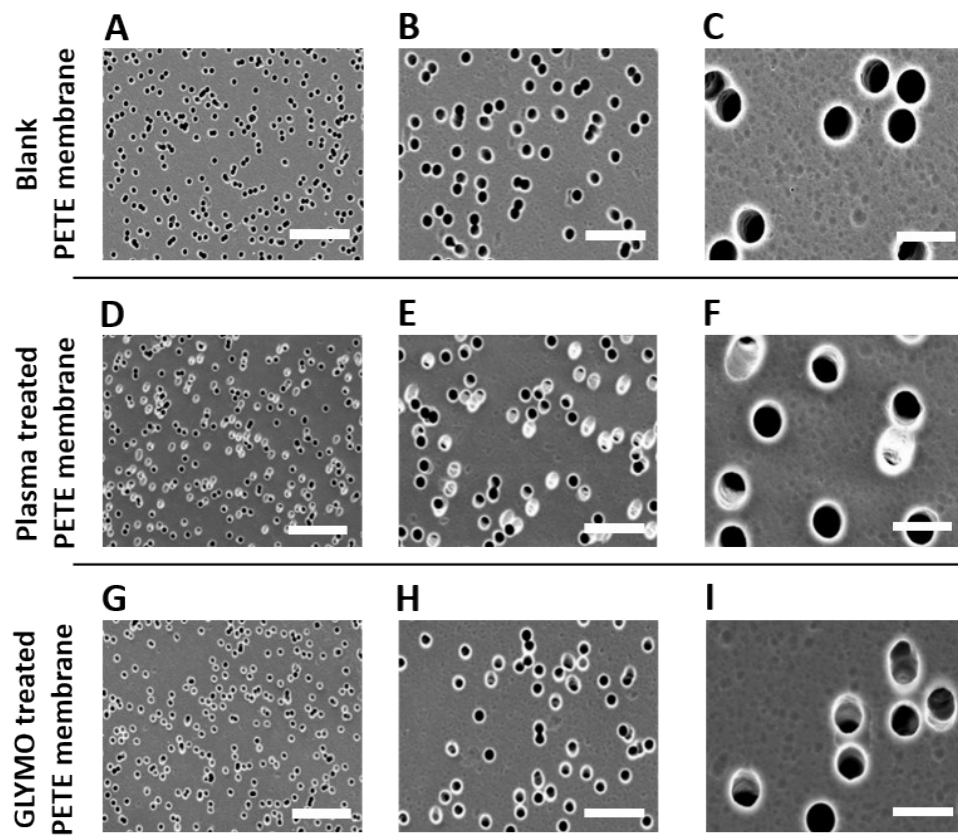


Figure S4

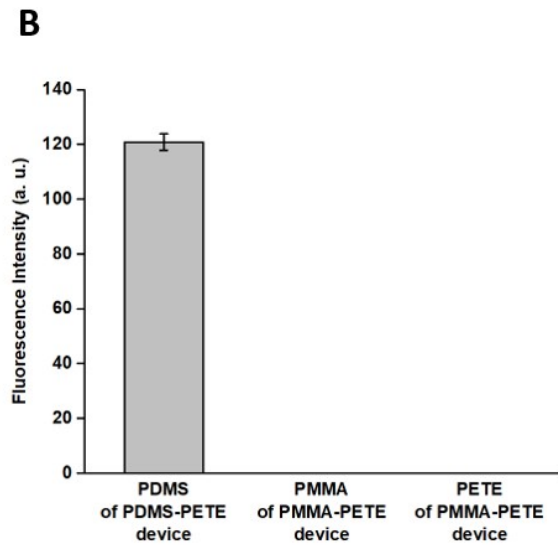
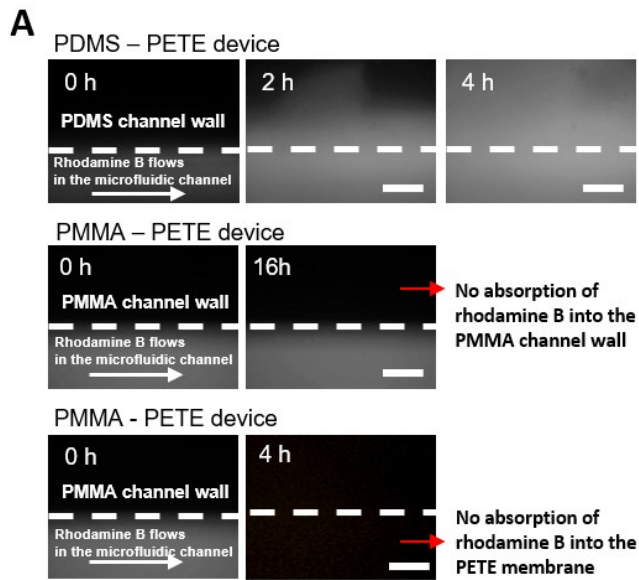


Figure S5

