Hybrid polymer microfluidic platform to mimic varying vascular compliance and topology

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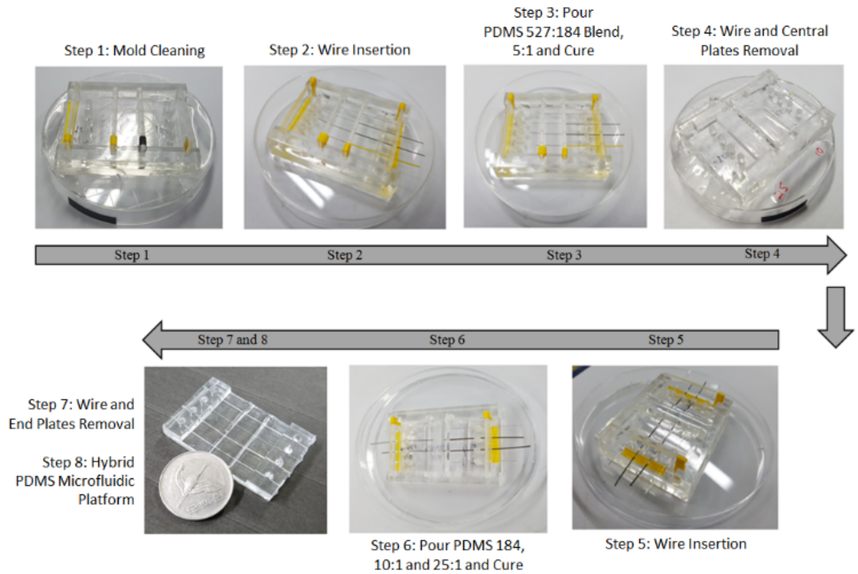

Fig. S1 Actual images of the steps involved in the process flow to develop the hybrid microfluidic platform.

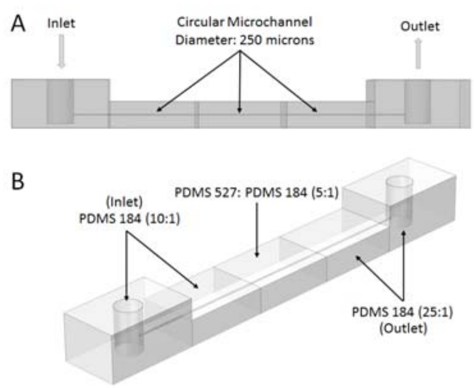

Fig. S2 One way fluid structure interaction simulation model to evaluate channel deformation and wall shear stress due to fluid flow. A) Side view of computational model illustrating inlet and outlet of the channel. B) Iso view of computational model with three different PDMS formulations along the channel length.

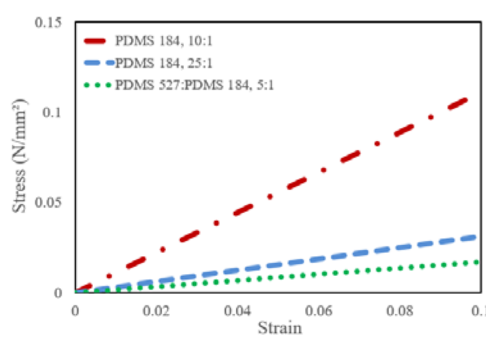

Fig. S3 Stress-strain curves of three different PDMS formulations upto 10% range of strain.

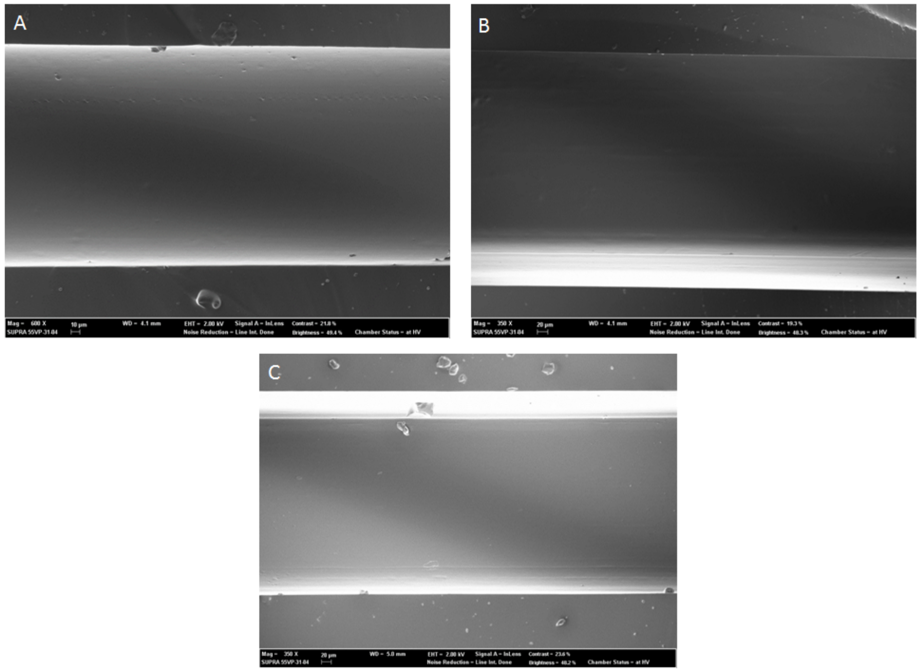

Fig. S4 Wall surface for different cross section channels. A) Circular cross section. B) Rectangular cross section. C) Square cross section

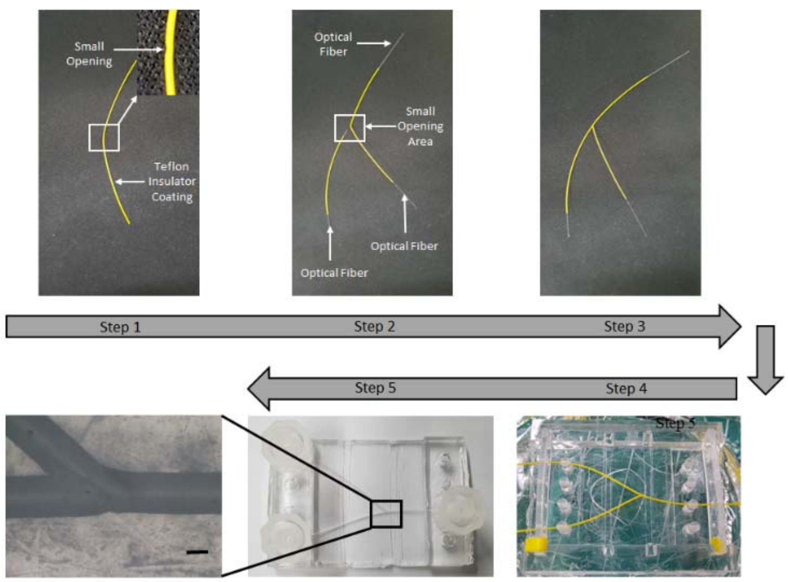

Fig. S5 Fabrication process flow for creating Y bifurcation microchannel. Scale bar, 250 microns

To fabricate Y bifurcation channels teflon insulator coating, external diameter 450 microns and internal diameter 250 microns, was separated from the conducting core of an electrical wire. Next, a small opening was created in the hollow teflon coating (Fig. S2, Step 1). Second step involved inserting optical fibres, diameter 250 microns, in the hollow teflon insulator coating from both the open ends, henceforth referred as wire 1. An additional teflon insulator coating inserted with optical fibre was prepared, henceforth referred as wire 2 (Fig. S2, Step 2). In the third step both the wires were joined. This was achieved by inserting wire 2 into wire 1 at the small opening created in step 1 (Fig. S2, Step 3). Next, the Y bifurcation wire assembly was carefully inserted in the customised acrylic mould, filled with PDMS 10:1 base:curing agent ratio mixed and degassed, and later allowed to cure overnight at 45°Celsius in a convection oven (Fig. S2, Step 4). Once cured, device was peeled from the mould and sealed at the ends to form a microfluidic platform consisting of Y bifurcation circular microchannel (Fig. S2, Step 5).