Analytical and Bioanalytical Chemistry

Electronic Supplementary Material

Insert-based microfluidics for 3D cell culture with analysis

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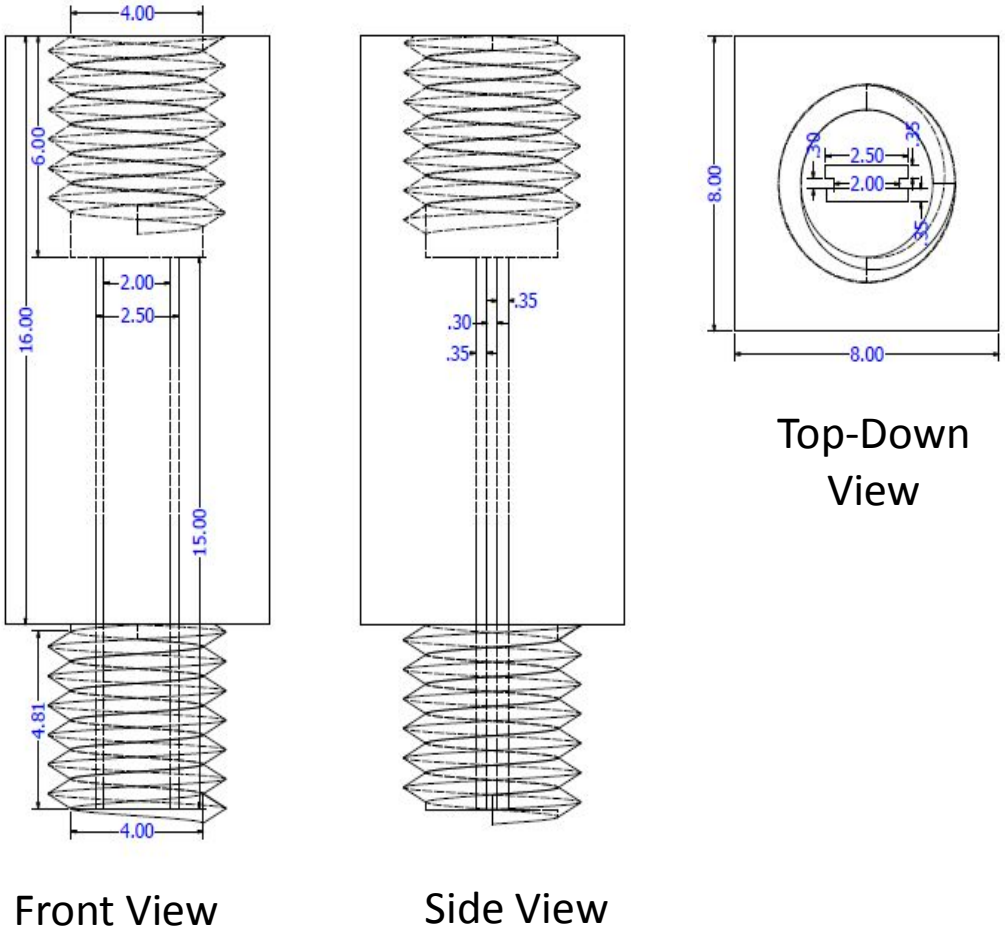

Fig. S1 Design of the fluidic device that can hold two inserts. All units are in mm

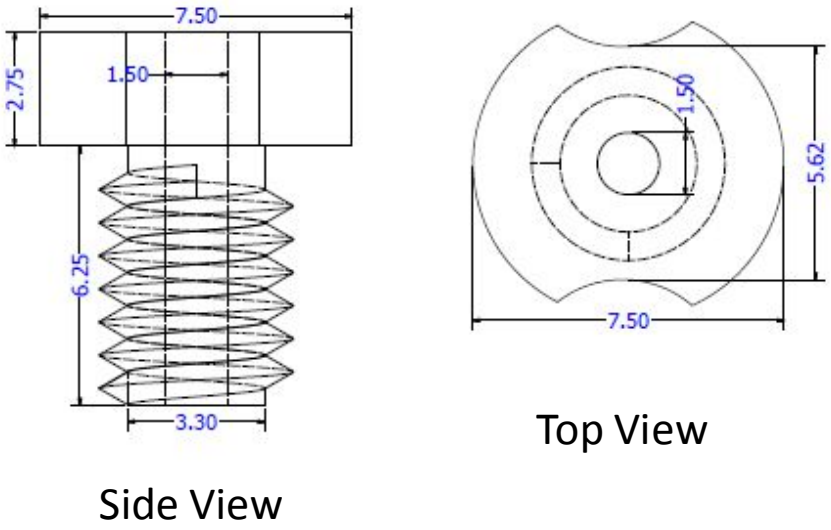

Fig. S2 Design of the adapter for connecting Tygon tubing with a device

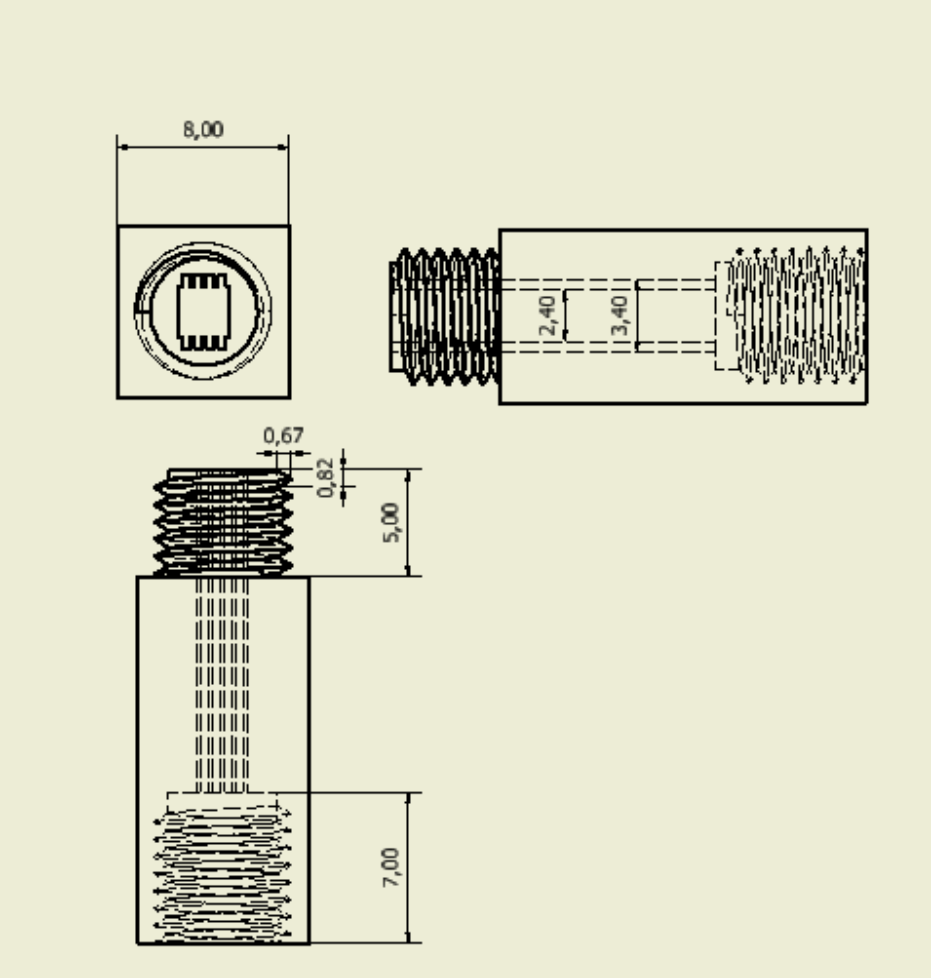

Fig. S3 Design of the fluidic device that can fit 4 inserts for the macrophage studies

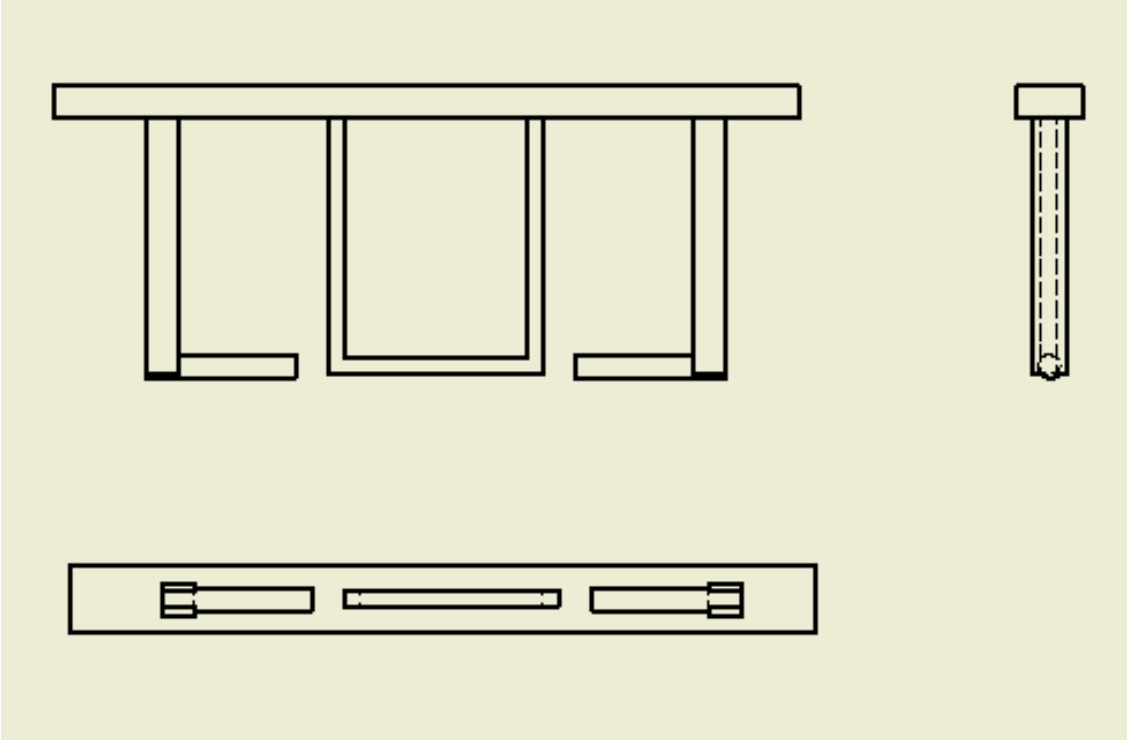

Fig. S4 Design of the sacrificing channel structure for the PDMS optical device

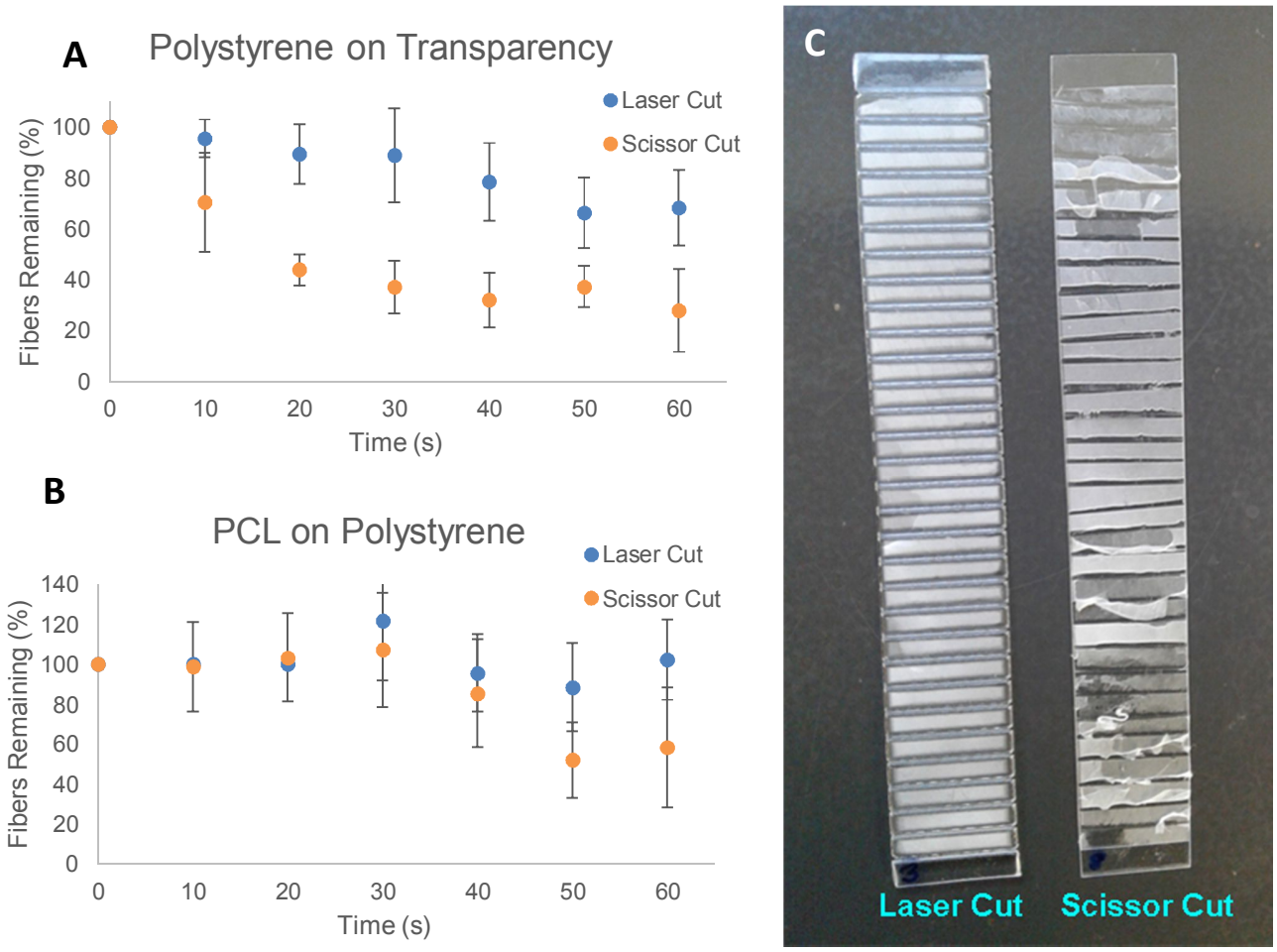

Fig. S5 Fiber loss by air blowing of other fiber material/substrate material combinations. (A) Polystyrene fibers on transparency film. (B) Polycaprolactone (PCL) on polystyrene. (C) Picture showing that the graphed mass (at the 60 sec. time point in B) does not account for the displaced PCL fibers (they are not stable but remain a layer that re-settles on the substrate after detachment), but the trend that laser cutting sinters the fibers to the insert is supported

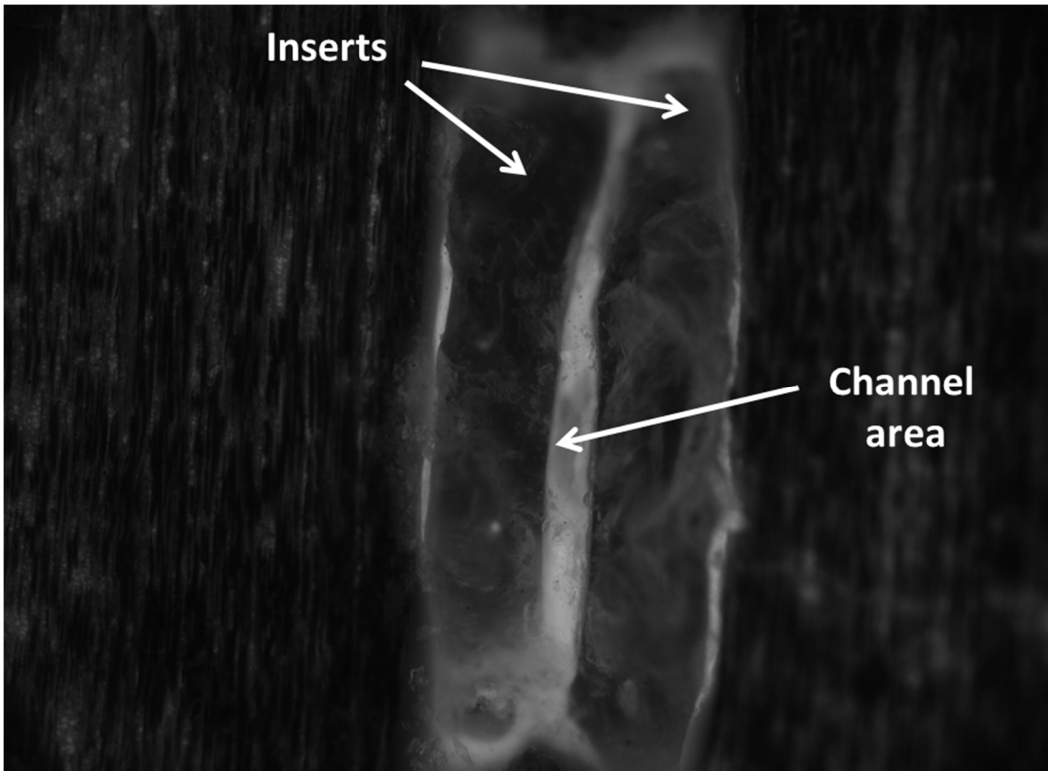

Fig. S6 Cross view of fluorescein solution flowing between two inserts in a channel

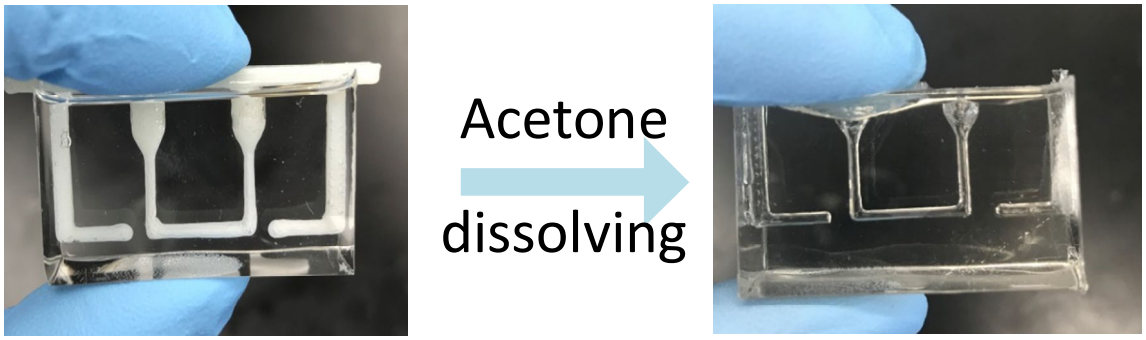

Fig. S7 Fabrication of the optical fluidic device for nitrite quantitation. A channel structure was 3D printed with ABS, which was then immersed in PDMS pre-polymer. After the PDMS cured, the whole piece was placed in acetone for about 5 hours, during which the ABS part was dissolved leaving the channel structures. The holes on both sides of the channel were designed to hold optical fibers for absorbance detection