

Using Micromachined Molds, Partial-curing PDMS Bonding Technique, and Multiple Casting to Create Hybrid Microfluidic Chip for Microlens Array

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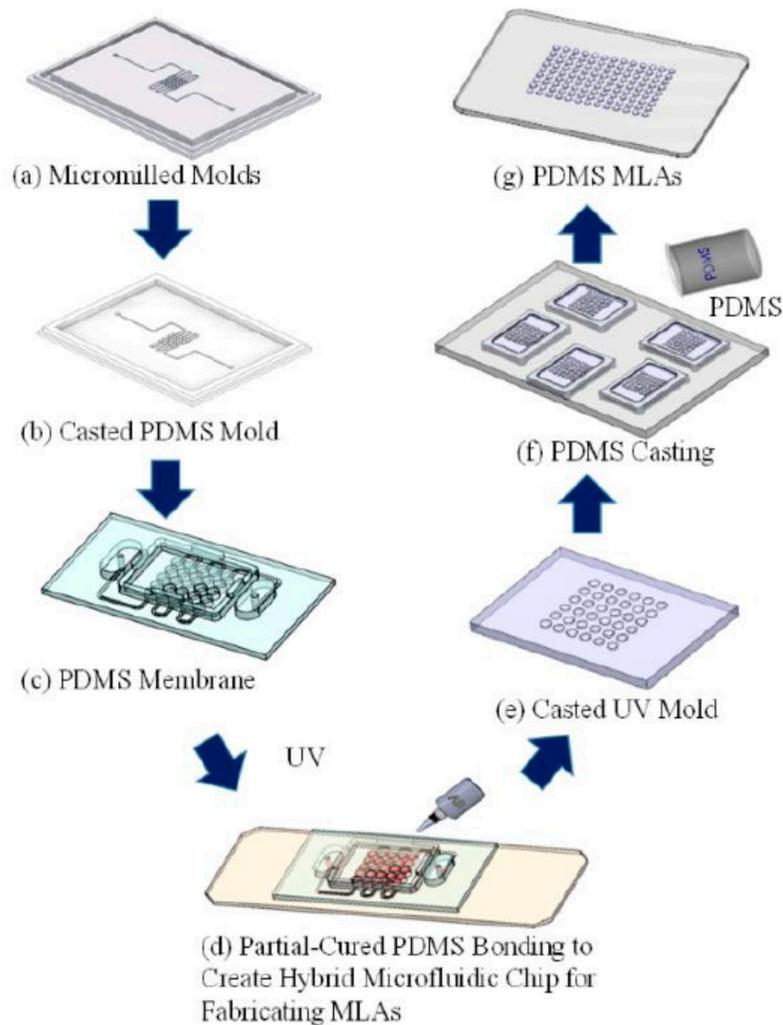
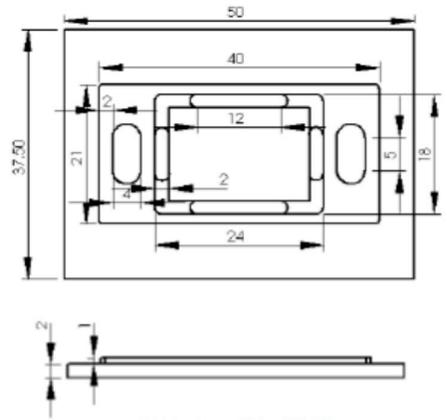
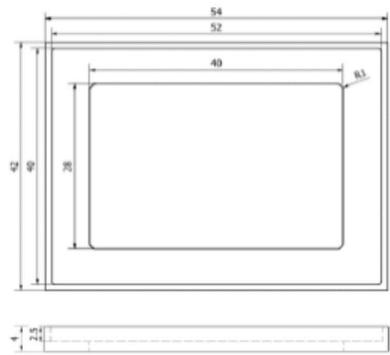


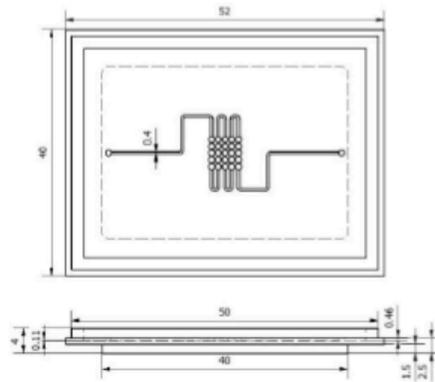
Figure 1. Overall revised fabrication process: (a) micromilling of mold insert; (b) casting of PDMS mold from micromilled mold insert; (c) casting of PDMS membrane from assembled mold insert, the assembled mold insert is described in Section 2.3.3; (d) using partial-curing PDMS bonding to form hybrid microfluidic chip for fabrication of MLAs; (e) UV adhesive casting on hybrid microfluidic chip for fabrication of UV adhesive mold insert; (f) assembly of UV mold inserts with PMMA fixture to control thickness of final PDMS MLAs; (g) completed PDMS MLA.



(a) Design of Top Mold



(b) Middle Mold



(c) Bottom Mold

Figure 2. (a) The dimension of top micromilled mold; (b) The dimension of middle micromilled mold; (c) The dimension of the micromilled mold which was used to cast the PDMS membrane. Then the PDMS membrane would assemble with other two molds a,b, and be used to create the 3rd mold (Figure 3d).