Supplementary Materials: A Versatile Bonding Method for PDMS and SU-8 and Its Application towards a Multifunctional Microfluidic Device

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Table S1. Bonding strengths between PDMS and glass/PDMS using plasma activation reported in different literatures.

Reference	Surface Treatment of PDMS-Glass/PDMS-PDMS Bonding	Bonding Strength Evaluated by Different Methods		
		Burst Test by Air (kPa)	Shear Strength Test (kPa)	Tensile Strength Test (kPa)
[1] [2] [3]	PDMS-glass/PDMS-PDMS: O_2 plasma (18 W, 60 s)	NA	NA	207–335
[4]	PDMS-glass: O_2 plasma (200 W, 300 s)	NA	maximum 74	NA
[5]	PDMS-glass/PDMS-PDMS: O_2 plasma (20 W, 30 s)	maximum 510/400	NA	NA
[6]	PDMS-PDMS: Corona (30 s) or O_2 plasma (20 W, 30 s)	average 290/300	NA	NA
[7]	PDMS-PDMS: O_2 plasma (100 W, 60 s)	NA	NA	406

Table S2. Various bonding methods between PDMS and SU-8 and evaluation of bonding strength by using different methods.

Reference	PDMS-SU-8 Bonding Method			Bonding Strength Evaluated by Different Methods		
	Treatment of PDMS	Treatment of SU-8	Post-Contact Treatment	Hydraulic Pressure (kPa)	Shear Strength (kPa)	Tensile Strength (kPa)
This work	1. O_2 plasma (30 W, 15 s) or corona (30 s); 2. Aqueous APTES solution (5% *v*/*v*, 20 min)	1. With or without hard baking; 2. Aqueous APTES solution (5% *v*/*v*, 20 min)	1. Heating at 90 °C for 30 min	1534	NA	>fraction strength of bulk PDMS
[8] [9] [10]	1. O_2 plasma (400 W, 15 s)	1. With or without hard baking 2. Vapor-phase APTES deposition in a closed chamber for 2 h	1. Applying ~0.5 kg/cm² weight to the top; 2. Heating at 70 °C for 10 min	NA	NA	NA
[11]	1. N_2 plasma (30 W, 120–240 s)	1. Without hard baking	1. Heating at 100 °C for 30 min	average 990	>fraction strength of bulk PDMS	NA
[12]	1. O_2 plasma (30 W); 2. Toluene APTMS solution (0.1–1.0 wt %)	1. Without hard baking	1. Heating at 80–100 °C for 30 min	average 910	NA	NA
[13]	1. O_2 plasma (50 W, 30 s); 2. Pure APTES (99%, 5 min)	1. Post-exposure baking temperature lower than 80 °C; 2. Without hard baking	1. Applying 2 N/cm² to the top; 2. Heating in an oven with a ramp of 2 °C/min to 150 °C (~1 h); 3. Keeping at 150 °C for 1 h; 4. Cooling down to 30 °C natually (~1 h)	NA	NA	~fraction strength of bulk PDMS

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