Electronic Supplementary Material (ESI) for RSC Advances.


# Supporting Information

## Part Ⅰ. Video files

**Video S1.** Bonding process in fabrication of pure polypropylene material microfluidic chip. The chip can be bended due to the stress generated in the bonding process as seen in the Video. Using a thicker substrate can greatly reduce the chip bending (such as, 2 mm thick substrate). Also, we can eliminate or correct the chip bending by clamping apparatus (chip holder).

**Video S2.** Droplet generation in the pure-polypropylene material microfluidic chip. The process was observed under optical inverted microscope.

**Video S3.** The microchannel filled with 5ng/μl aqueous solution of fluorescence labeled DNA. After rinsed with deionized water, the fluorescence intensity of the microchannel was same as the non-channel area(background),which indicated the nonspecific adsorption of DNA in the polypropylene microchannel was low. The process was observed under laser scanning confocal microscope system.

**Video S4.** The in-situ temperature measurement during the bonding process.

## Part Ⅱ. Pictures

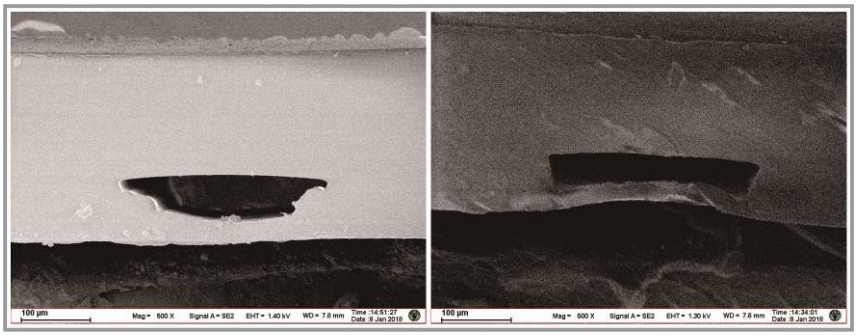

**Fig. S1.** SEM pictures of the microchannel's cross-section. The cross-sections were obtained by blade cutting.

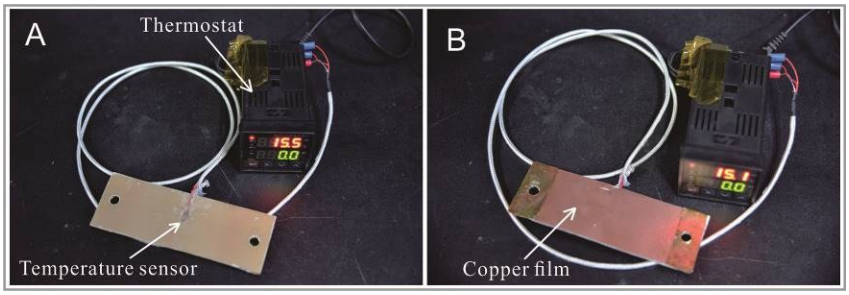


**Fig. S2.** A temperature sensor stuck to the copper film (heating film) of the copper clad laminate.

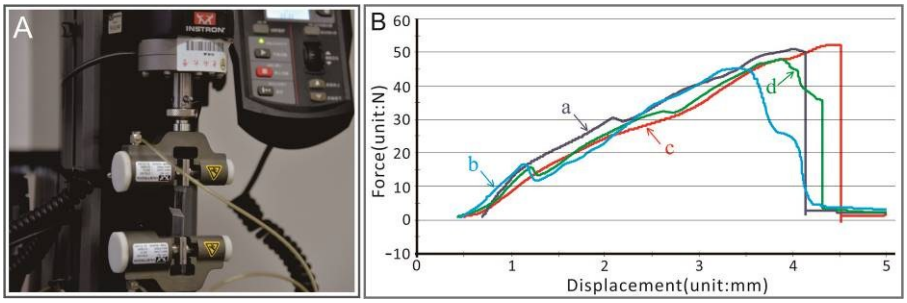


**Fig. S3.** The peel strength test for the polypropylene chips with width of 25mm in a material testing machine. (A) The material testing machine and the polypropylene chip. (B) Force curves for 4 different polypropylene chips.

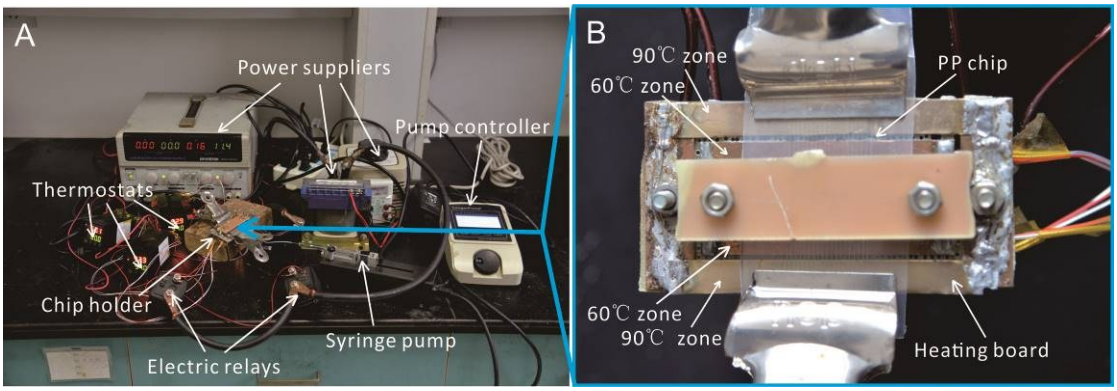


**Fig. S4.** The microfluidic PCR experimental platform. (A) The whole platform, including 3 power suppliers, 3 temperature controllers(thermostats), chip holder, syringe pump and its controller, various electric connecting wires, and so on. (B) Chip holder, including heating board with 2 temperature zones, microfluidic chip and chip clamping apparatus.