

**Supplementary Information:**

**Fabrication of Paper Microfluidic Devices using a Toner Laser Printer**

James S. Z. Ng, Michinao Hashimoto\*

Pillar of Engineering Product Development, Singapore University of Technology and Design

8 Somapah Road, Singapore, 487372, Singapore

\* Corresponding author:

Michinao Hashimoto, Assistant Professor,

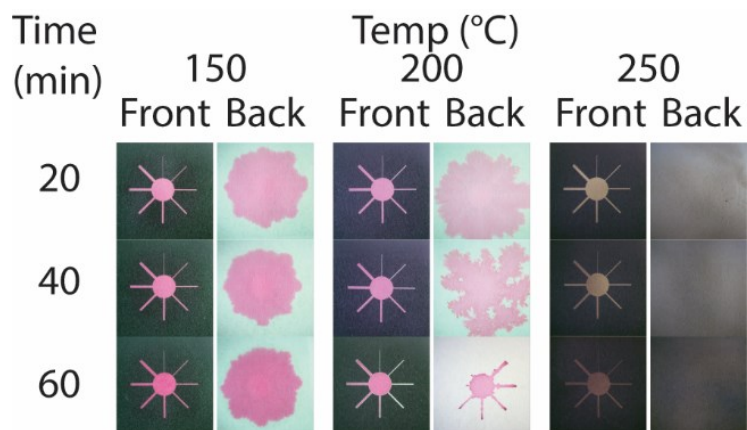
Pillar of Engineering Product Development

Email: [hashimoto@sutd.edu.sg](mailto:hashimoto@sutd.edu.sg)

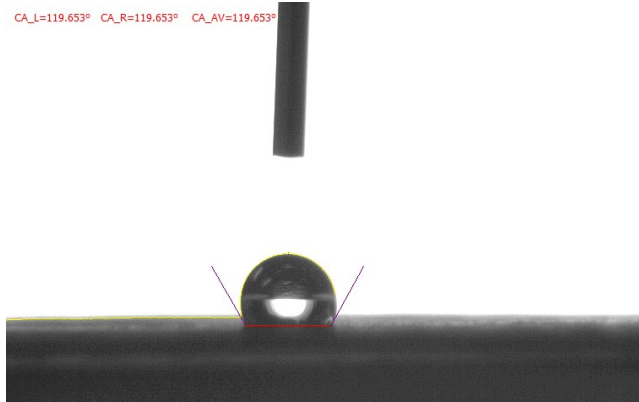
Telephone: +65 6499 4867

**Table S1.** Composition of Canon NPG-45 toner (Canon MSDS)

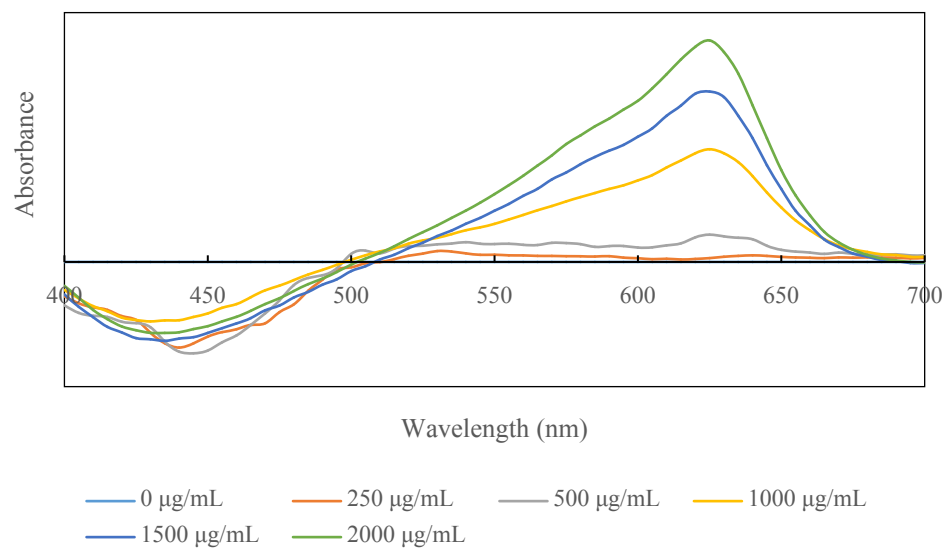
Chemical name	Weight %
Polyester resin	80 – 90
Carbon black	1 - 5
Pigment	1 - 5
Amorphous silica	1 - 3
Titanium dioxide	< 1



**Figure S1.** Penetration of toner printed on the filter paper heated at 150 °C, 200 °C, and 250 °C on a hotplate for 20 min, 40 min, and 60 min. An aqueous solution containing red dye was placed at the center of the eight-channel pattern. The penetration of the toner did not take place at 150 °C, and the Whatman filter paper became charred at 250 °C (within 20 min). Heating at 200 °C for 60 min resulted in forming well-defined microchannels.



**Figure S2.** A photograph of 2- $\mu$ L droplet of D.I. water on the toner surface. The average contact angle of  $120.8^\circ \pm 2.9^\circ$  was measured by the sessile drop method.



**Figure S3.** Absorbance spectrum of the BSA measured with TBPB (400 – 700 nm) by the plate reader, showing an absorbance peak at 620 nm.