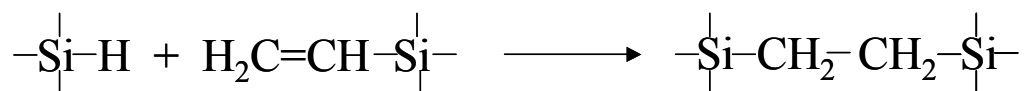


## Electronic supplementary information

### In-situ synthesis of poly(dimethylsiloxane)/gold nanoparticles composite films and its application in microfluidic systems

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Scheme 1S. Crosslinking reaction between the curing agent and the monomer of PDMS.

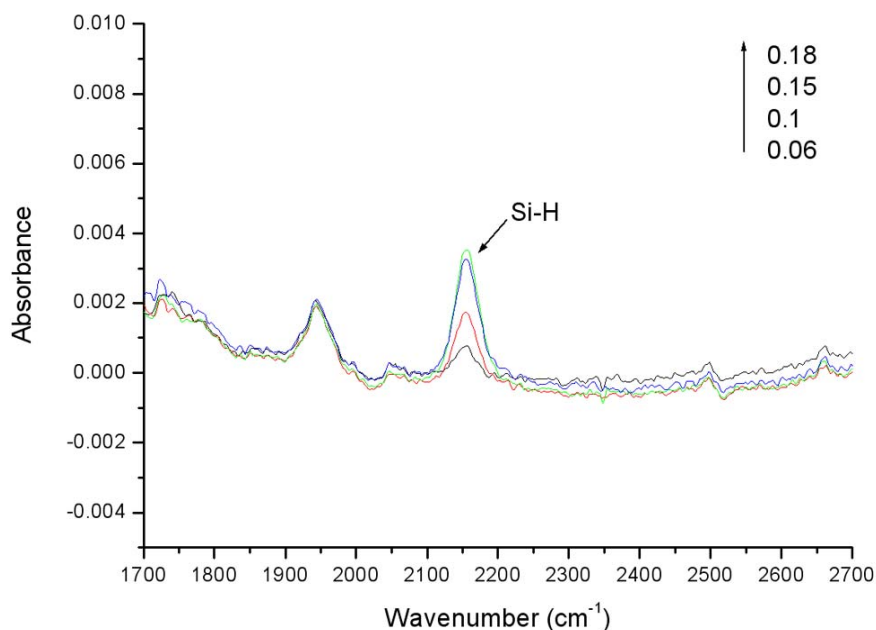


Fig. 1S. Comparison of ATR-FT-IR spectra of the PDMS film with different mass ratios ( $\eta$ ) of the curing agent and the monomer of PDMS.

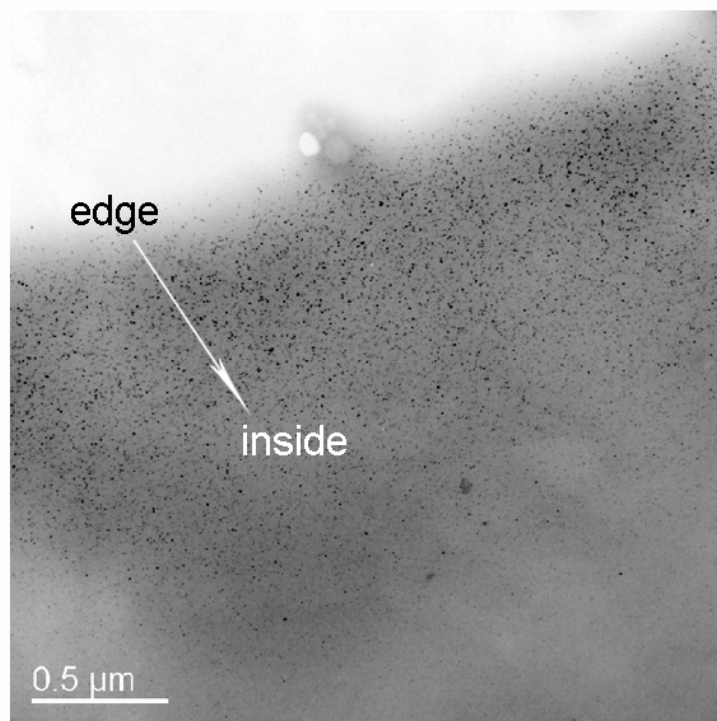


Fig. 2S TEM image of the cross section of the gold nanoparticles/PDMS free-standing films.  $\eta$  was 0.06.

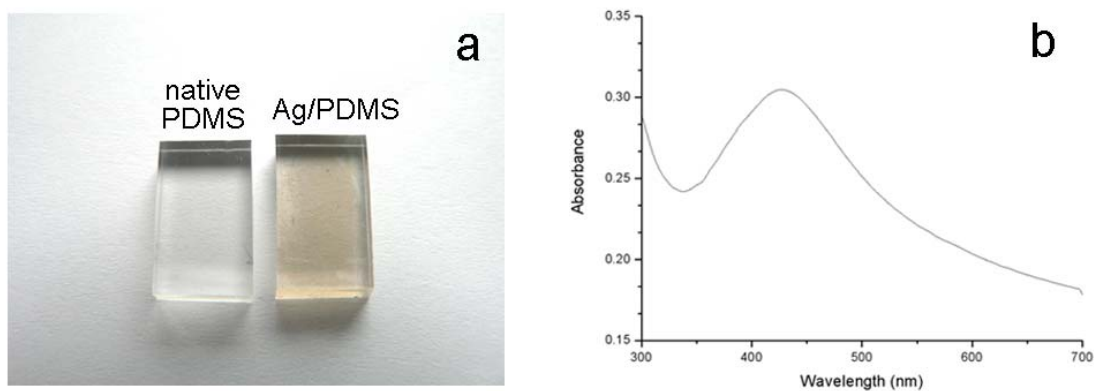


Fig. 3S. Photographic image (a) and UV-vis spectra (b) of Ag nanoparticles/PDMS free-standing film ( $\eta = 0.1$ , incubation time = 48 h).