Electronic Supplementary Material (ESI) for Lab on a Chip.

Supplementary materials for:

Real-time isothermal DNA amplification monitoring in picoliter volumes using optical fiber sensor.

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Experimental work.

To visualize the presence of DNA resulting from RCA reactions we have performed another test using SYBR Green that confirmed our functionalization, amplification, and thus detection method.

RCA reaction on a glass slide

Glass slides were functionalized with DBCO modified primers using the same procedure used to functionalize the optical fibers with the following exceptions, the 2 hours curing step at 105°C was omitted, RCA reactions were performed in a final volume of 30 µL by including different concentrations of c-PLP, L-PLP (linear PLP), and no PLP (depending on the reaction) with a final concentration of 416 µM deoxyribonucleotide triphosphate (dNTP) (Thermo Fisher Scientific, USA), 1X Phi29 DNA polymerase buffer (NEB), 30 µg bovine serum albumin – BSA (NEB), 8 units of Phi29 DNA polymerase (NEB) and a final concentration of 1x SYBR Green dye (Invitrogen, USA) which becomes fluorescent upon binding dsDNA. The reactions were placed on functionalized glass slides at room temperature for 90 mins and then glass surfaces were scanned with a Typhoon FLA 9500 biomolecular imager (GE Healthcare) to visualize the presence of the dsDNA resulting from the HRCA reactions.

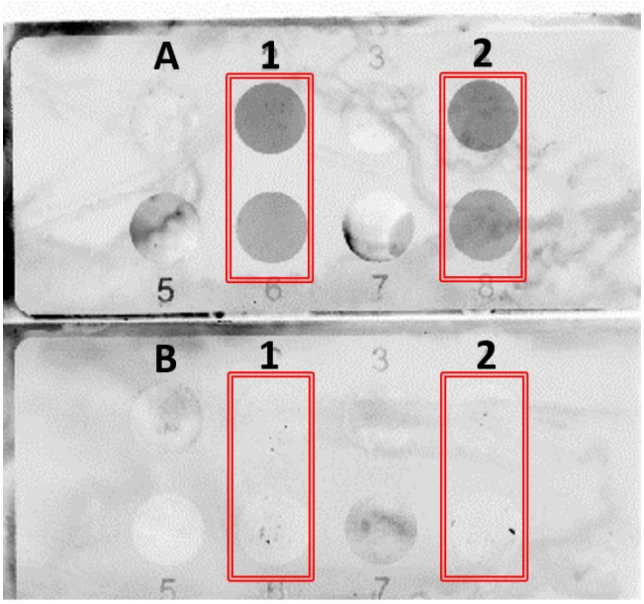

Figure S1. Visualization of the RCA reaction on a glass slide using SYBR Green. (A) Positive controls. A1 and A2, RCA reaction in the presence of 50 nM and 10 nM of c-PLP, respectively. (B) Negative controls. B1 and B2: RCA reaction in the absence of PLP and the presence of 50 nM of L-PLP (non-circularized PLP), respectively.