One Step Fabrication of Enzyme Immobilized Reusable Polymerized Microcapsules from Microfluidic Droplets.

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Supporting Information

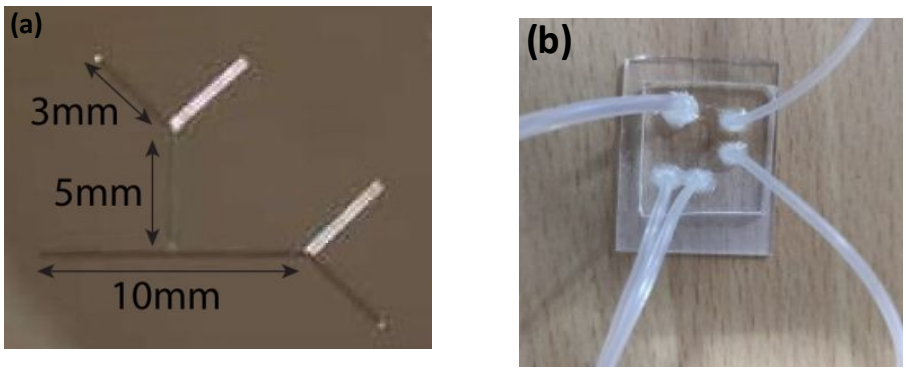

Figure S1: Digital image of (a) master on silicon wafer and (b) double Y-shaped microfluidic chip.

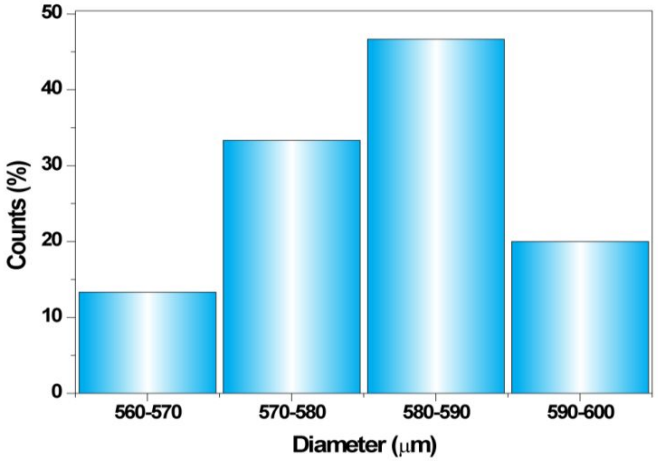

Figure S2: Droplet size distribution of polymerised microcapsules.

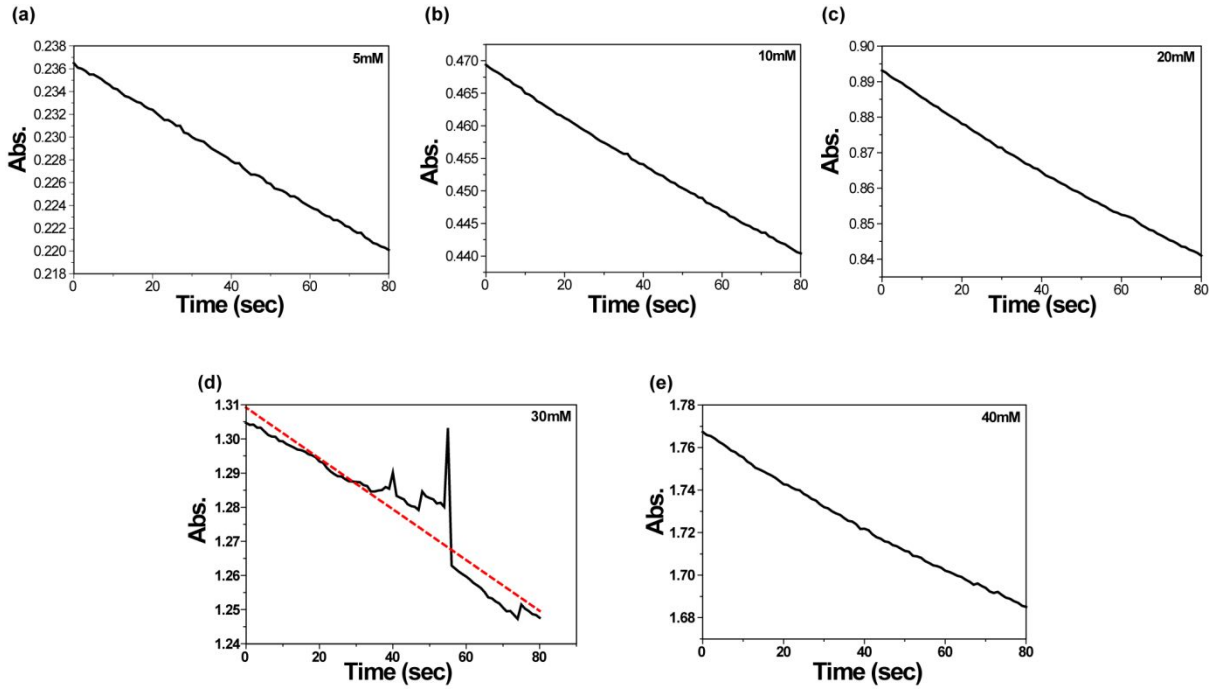

Figure S3: Absorbance (at 240nm) versus time plots for polymerised MCs with different H_2O_2 concentrations of (a) 5 mM (b) 10 mM (c) 20 mM (d) 30 mM (Due to the intermittent bubble formation and its migration causes disturbance in the UV absorption spectrum of the enzyme kinetics as shown in figure) (e) 40 mM.

Characterization: Microcapsules (MCs) were observed with an optical microscope (Olympus BX53F microscope). Transmission electron microscopy (TEM) was used to observed material shell (Au NPs) with a JEOL JEM-2100 microscope operating at acceleration voltage 200KV. The dried MCs and their morphology were observed with SEM (JEOL JSM-IT300 microscope); the samples were coated with gold to render them conductive. The polymerized MCs were also characterised by FT-IR (ATR) spectrometer (Bruker vertex 70). The dynamic surface tension of the NPs and NP−protein conjugates at the liquid-liquid interface was measured using the pendant drop method (Drop Shape Analyzer – DSA25 - KRÜSS GmbH). The absorbance for enzymatic activity assay and reusability of MCs was measured by UV–vis spectrophotometer (UV-2600 ultraviolet-visible spectrophotometer SHIMADZU).