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Electronic Supplementary Information

Inkjet printing based assembly of thermoresponsive core-shell polymer microcapsules for controlled drug release

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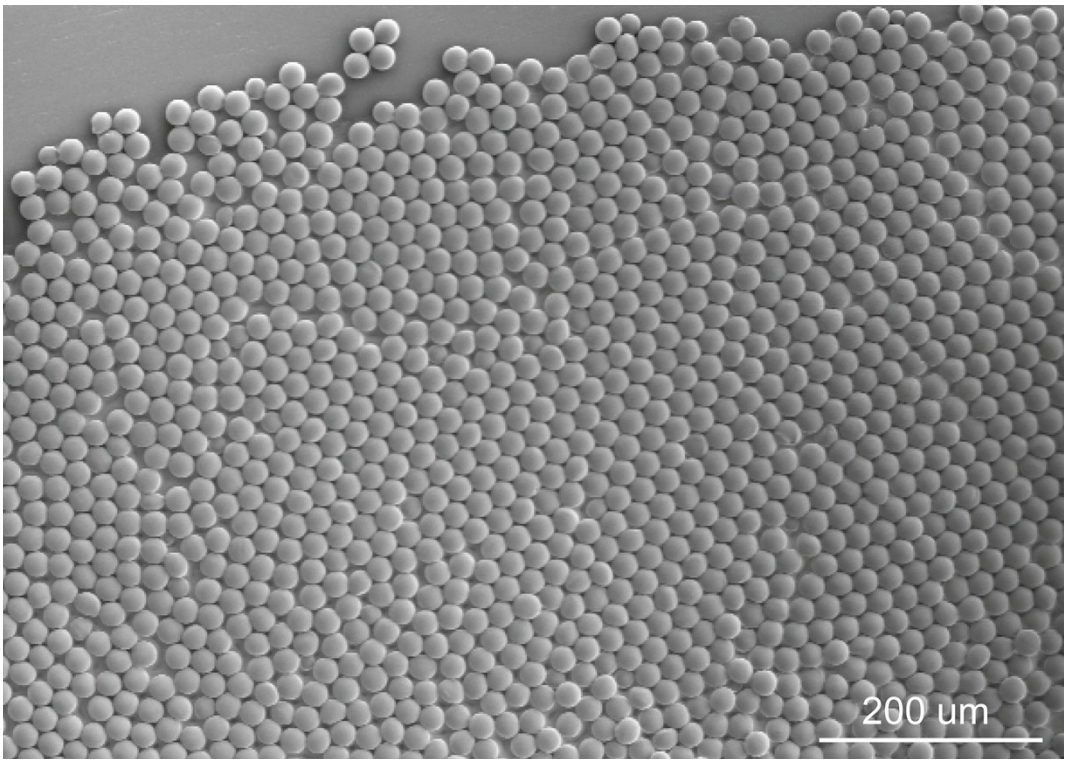

Fig. S1 SEM image of monodisperse HDDA particles.

Table S1. The ingredients and reaction conditions for the synthesis of cross-linked poly(NIPAAm-co-MAA).

Polymer	NIPAAm (mmol)	MAA (mmol)	MBA (mmol)	KPS (mg)	H_2O (mL)	Temperature (^oC)	Time (h)
a	0.5	0	0.05	2.5	25	70	6
b	0.5	0.01	0.05	2.5	25	70	6
c	0.5	0.05	0.05	2.5	25	70	6
d	0.5	0.10	0.05	2.5	25	70	6
e	0.5	0.20	0.05	2.5	25	70	6

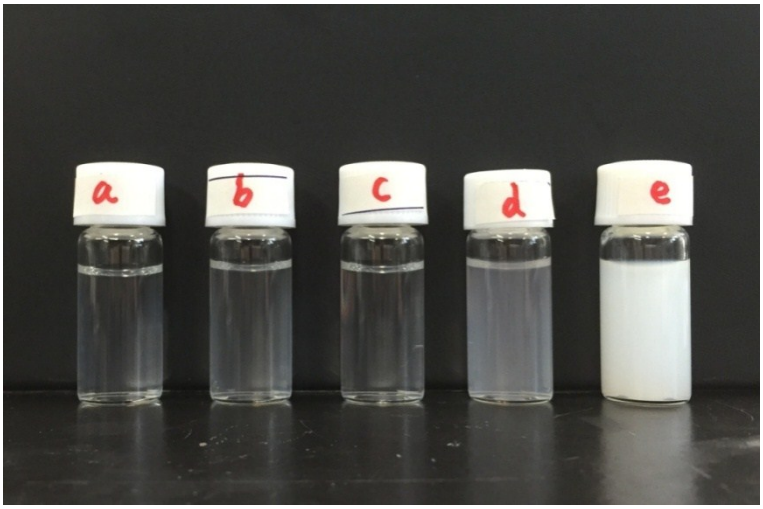

Fig. S2 Photograph of polymer solutions at room temperature (about 25 °C). The polymer solution with molar ratio of NIPAAm to MAA was, (a) 100:0, (b) 100:2, (c) 100:10, (d) 100:20, and (e) 100:40. Reaction condtions are listed in Table S1. The color of the polymer solutions changed from transparent to milky white with incresing concentrations of MAA.

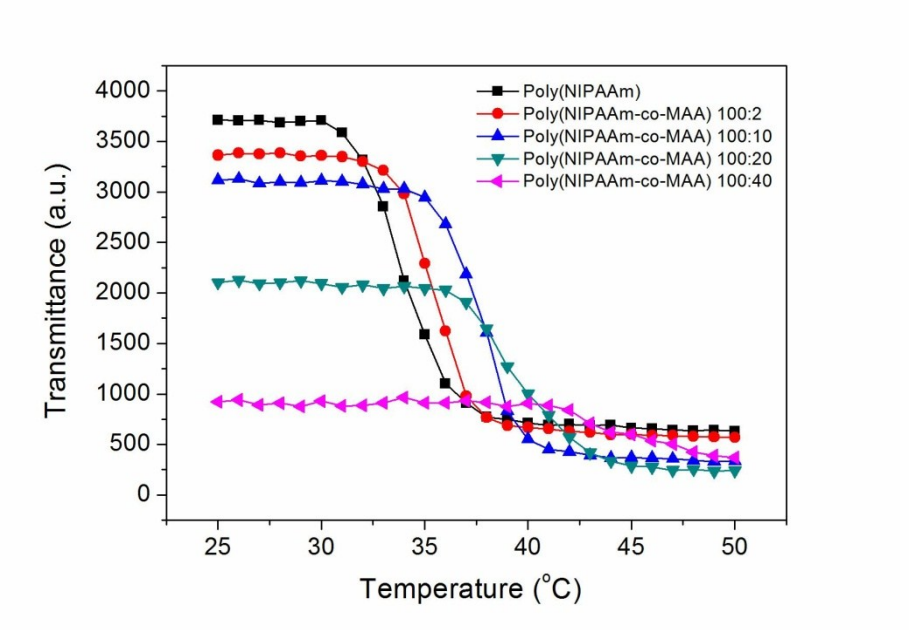

Fig. S3 Transmittance of various poly(NIPAAm-co-MAA) solutions in PBS from 25 °C to 50 °C.

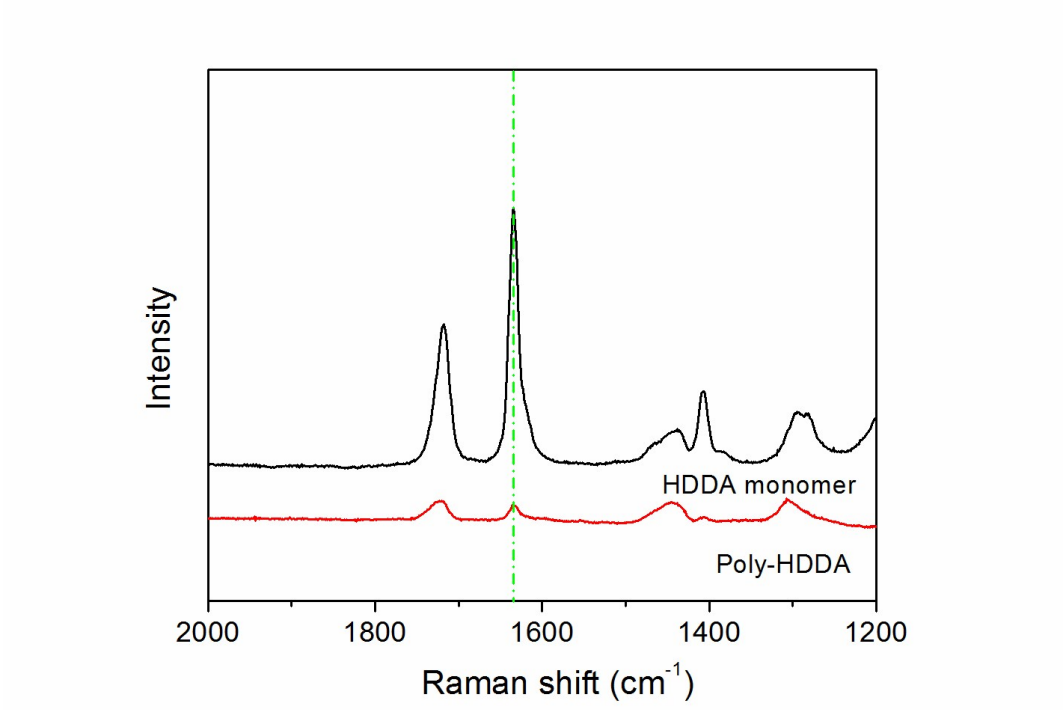

Fig. S4 Raman spectrum of HDDA monomer and poly-HDDA particles. The peak at 1630 cm^{-1} is assigned to unsaturated double carbon bonds.

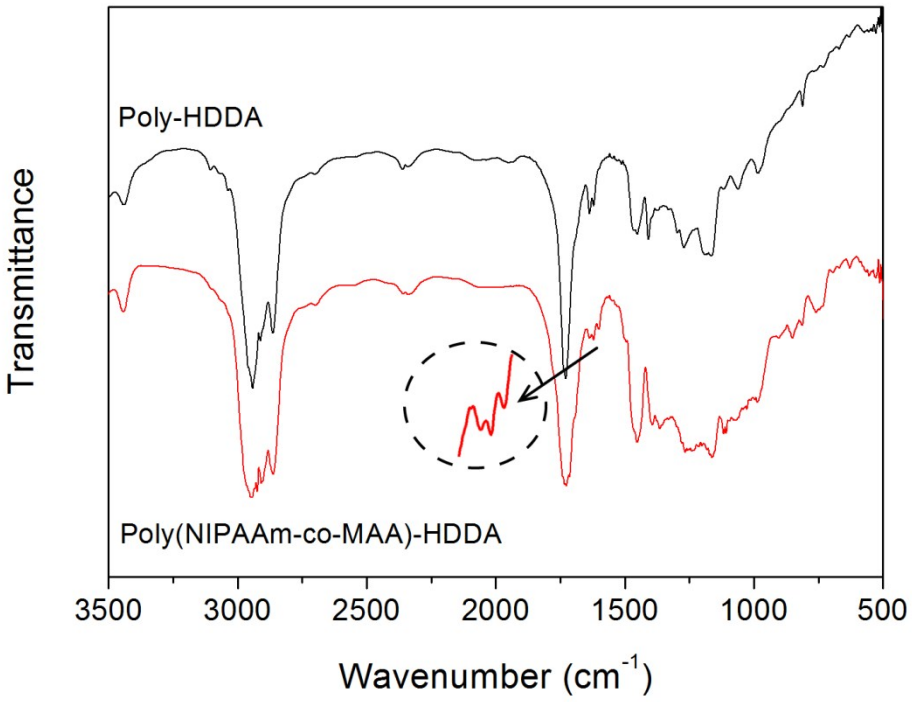

Fig. S5 FT-IR spectrum of poly(HDDA) particle and poly(NIPAAm-co-MAA) grafted HDDA particle. The main peaks are (λ cm^{-1}): 1725, 1630, and 1590, which represent a stretching vibration of C=O, unsaturated double bonds, and bending frequency of amide N-H, respectively. The bending frequency of amide N-H indicates that the NIPAAm based copolymer was successfully synthesized on the HDDA particles.

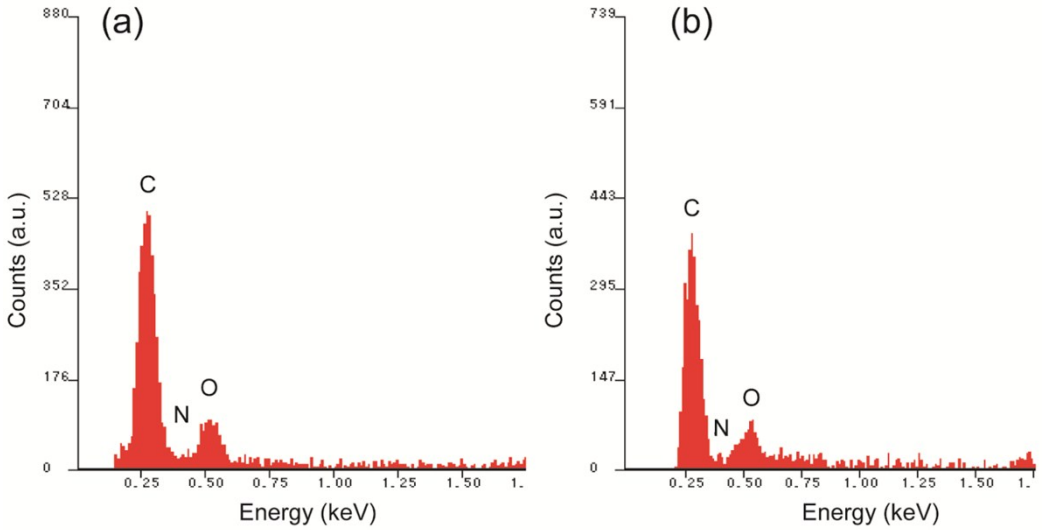

Fig. S6 EDX characterization of (a) HDDA particles and (b) poly(NIPAAm-co-MAA) grafted HDDA particles. A peak corresponding to nitrogen was found in the poly(NIPAAm-co-MAA) grafted HDDA, whereas there no nitrogen was observed in the HDDA sample.

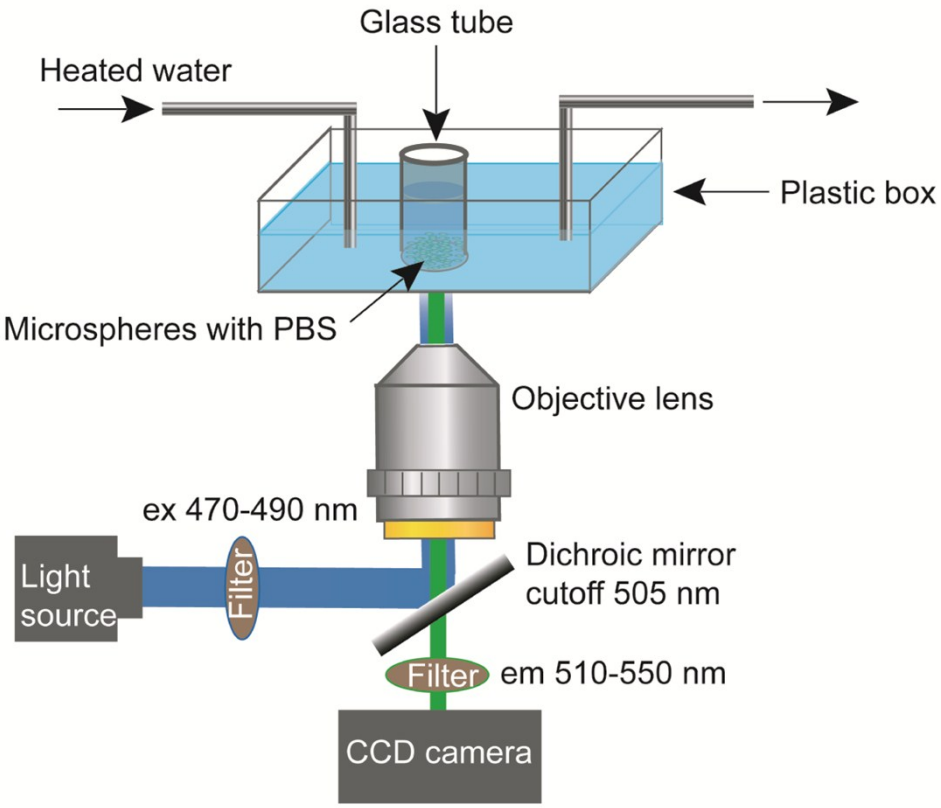

Fig. S7 Schematic illustration of the set-up used to investigate the enclosing and release of thermoresponsive hollow microcapsules.