

NIR Light-Triggered Expansive Starch Particles for Artificial Thrombus

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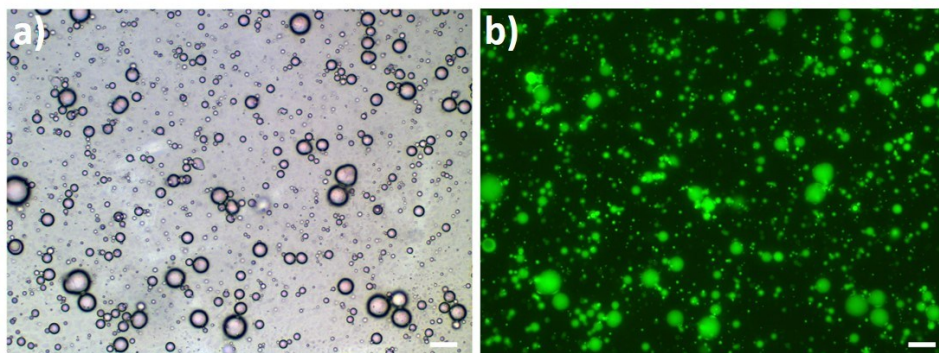


Figure S1. a) Optical microscopic image of W/O emulsion in which the disperse phase is starch aqueous solution. b) Fluorescence microscopic image of W/O emulsion in which the water phase is loaded with fluorescein disodium salt. Scale bar is 20 μm .

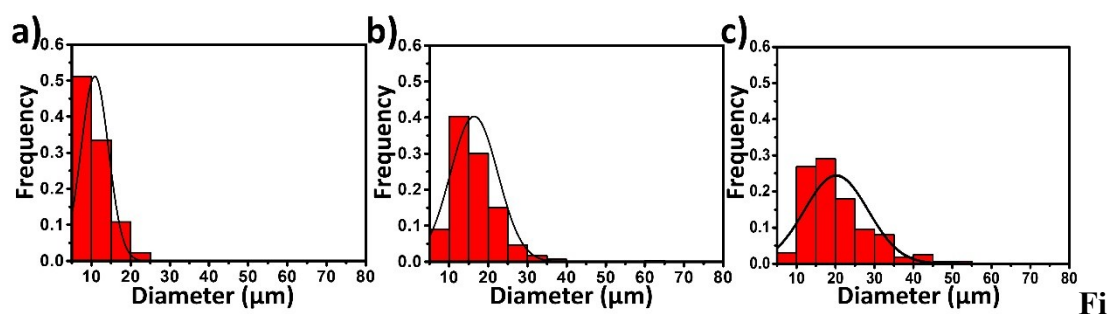


Figure S2. a) Size distribution of unmodified starch particles at dry state. b) Size distribution of modified starch particles (5 $\mu\text{L}/\text{mL}$ OTS for 30 min) in hot water (55°C). c) Size distribution of unmodified starch particles in cold water (25°C).

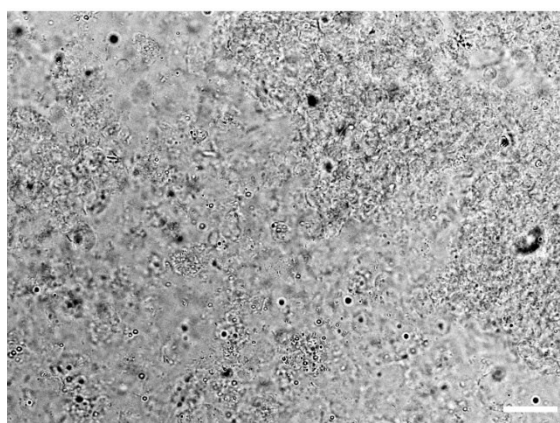


Figure S3. Optical microscopic image of totally broken starch particles in aqueous solution under heating at 100°C for 20 min. Scale bar is 20 μm .

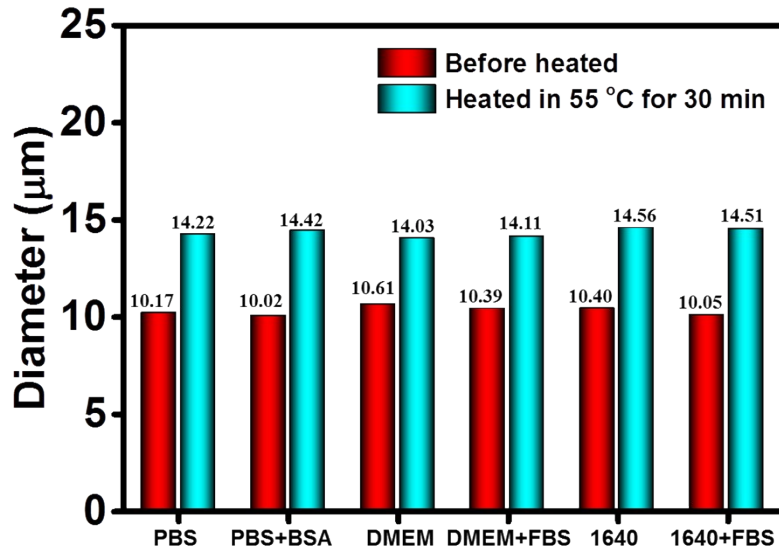


Figure S4. Diameter statistics of OTS-modified starch particles in different solution media (PBS, PBS with 800×10^{-6} M BSA, DMEM, DMEM with 10% FBS, 1640 and 1640 with 10% FBS) before heated and heated at 55 °C for 30 min.

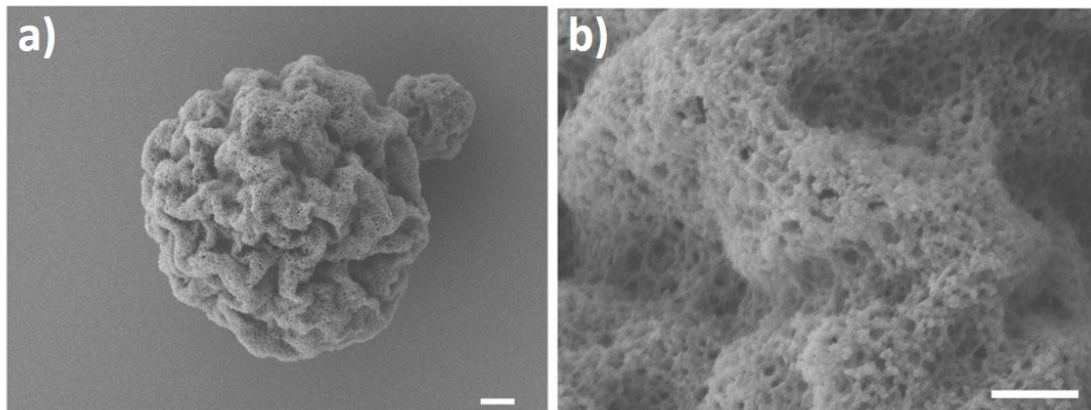


Figure S5. SEM images of PPy NPs-loaded starch particles. Scale bar of a) and b) is 1 μm and 500 nm, respectively.

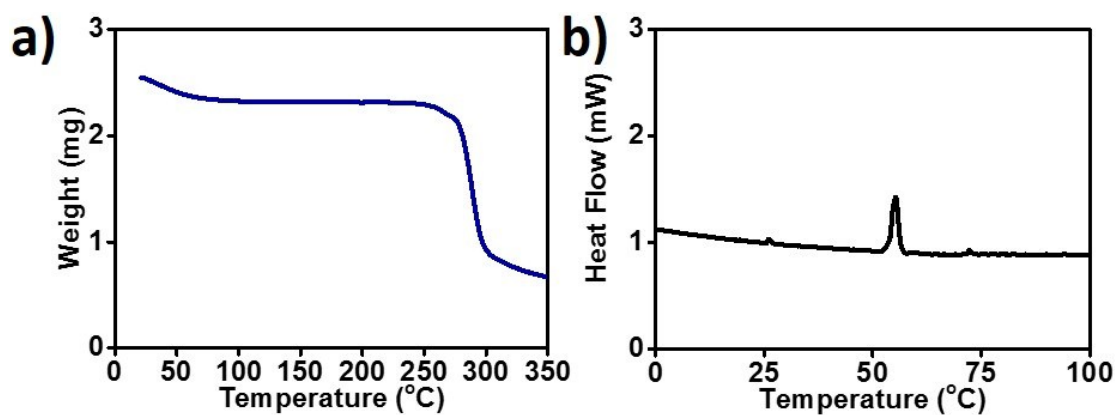


Figure S6. a) Thermogravimetric analysis (TGA) of starch particles. b) Differential Scanning Calorimetry analysis of pristine potato starch.

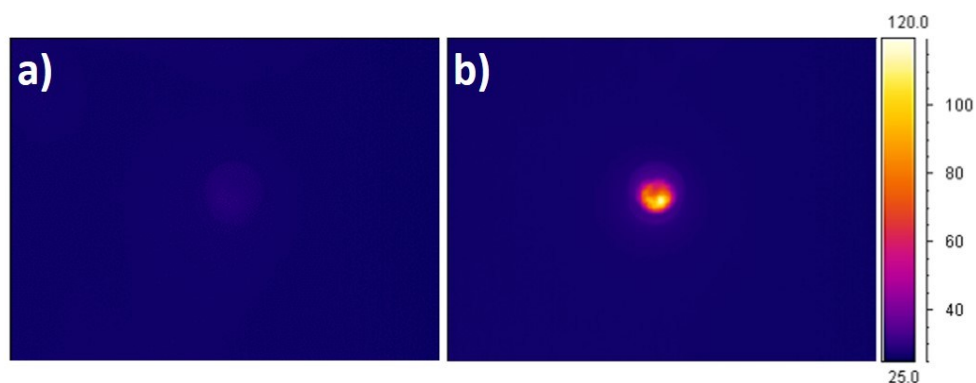


Figure S7. a) IR thermal image of pure starch particles upon NIR light illumination for 10 min. b) IR thermal image of starch particles doped with PPy NPs (4.5 wt.%) under NIR light illumination for 10 min. Light power density is 0.50 W/cm².

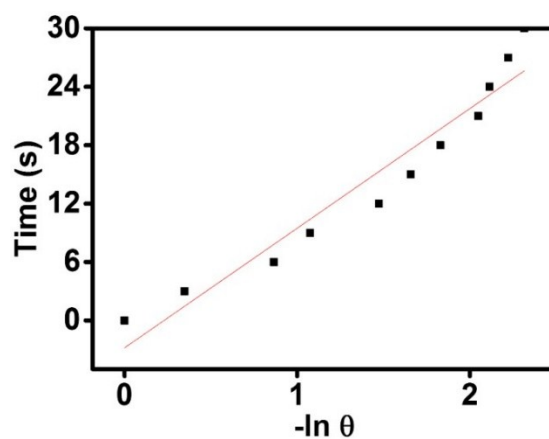


Figure S8. Linear fit of the cooling time against $-\ln\theta$ during a typical cooling period in Fig. 3c. θ is defined as the ratio of ΔT to ΔT_{\max} .

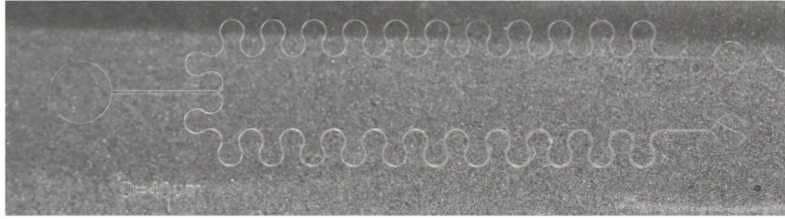


Figure S9. The optical image of microchannel which is used as a model of blood vessel.



Figure S10. Optical image of the microchannel that is successfully blocked by the expanded starch particles.

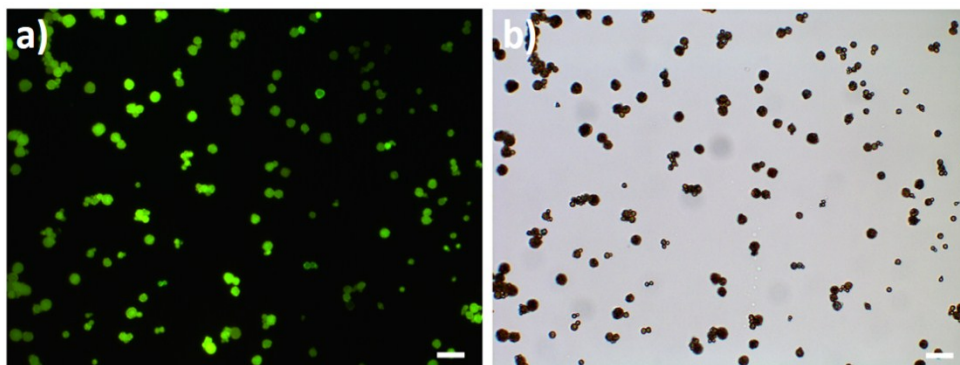


Figure S11. Fluorescence a) and bright-field b) microscopic image of OTS modified starch particles loaded with fluorescein disodium salt. Scale bar is 20 μm .

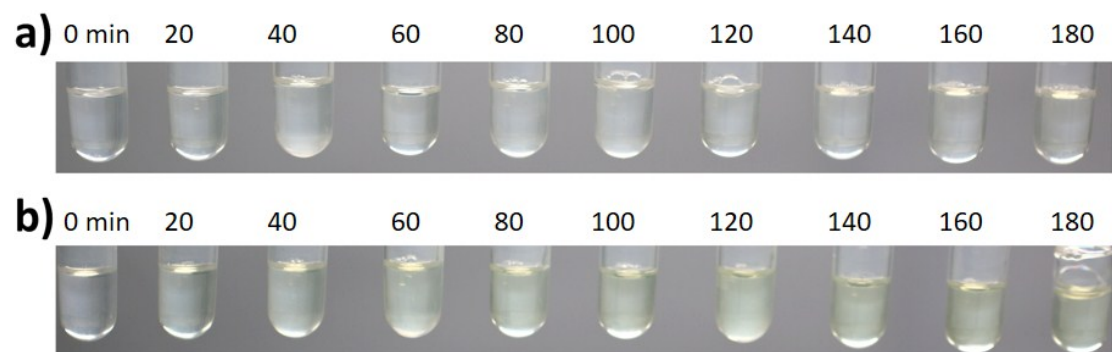


Figure S12. Optical images of aqueous solutions consisting of fluorescein disodium salt-loaded starch particles upon the release of fluorescein disodium salt without a) and with b) NIR illumination.