Armored colloidal photonic crystals for solar evaporation

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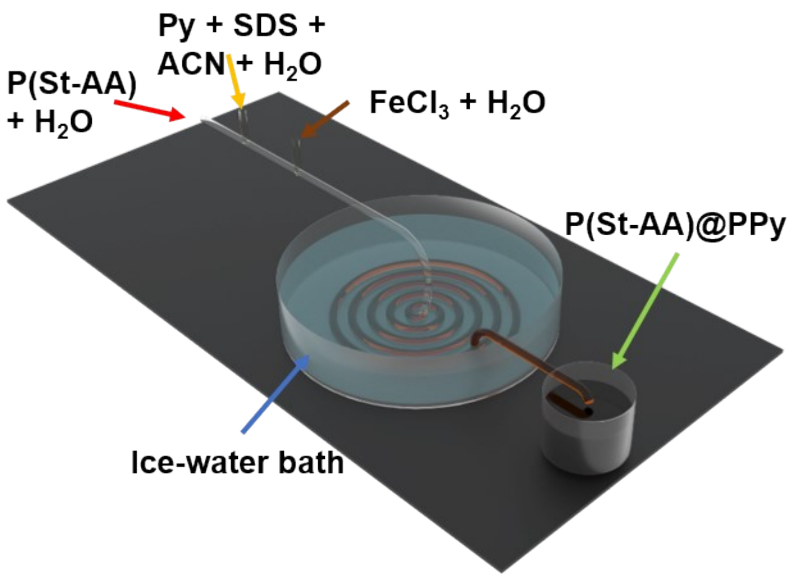

Fig. S1 Preparing P(St-AA)@PPy via droplet microfluidic technology.

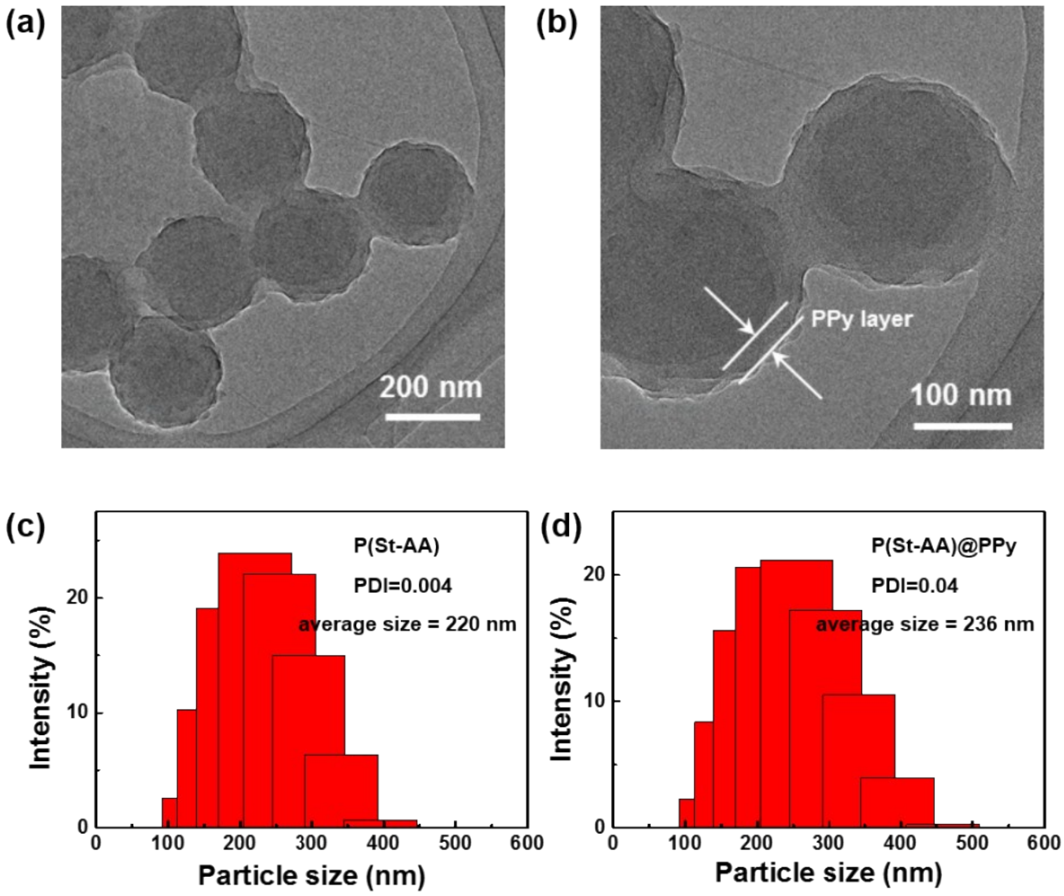

Fig. S2 (a-b) TEM images of P(St-AA)@PPy colloidal particles. (c-d) Particle size distribution diagrams of P(St-AA) and P(St-AA)@PPy colloidal particles.

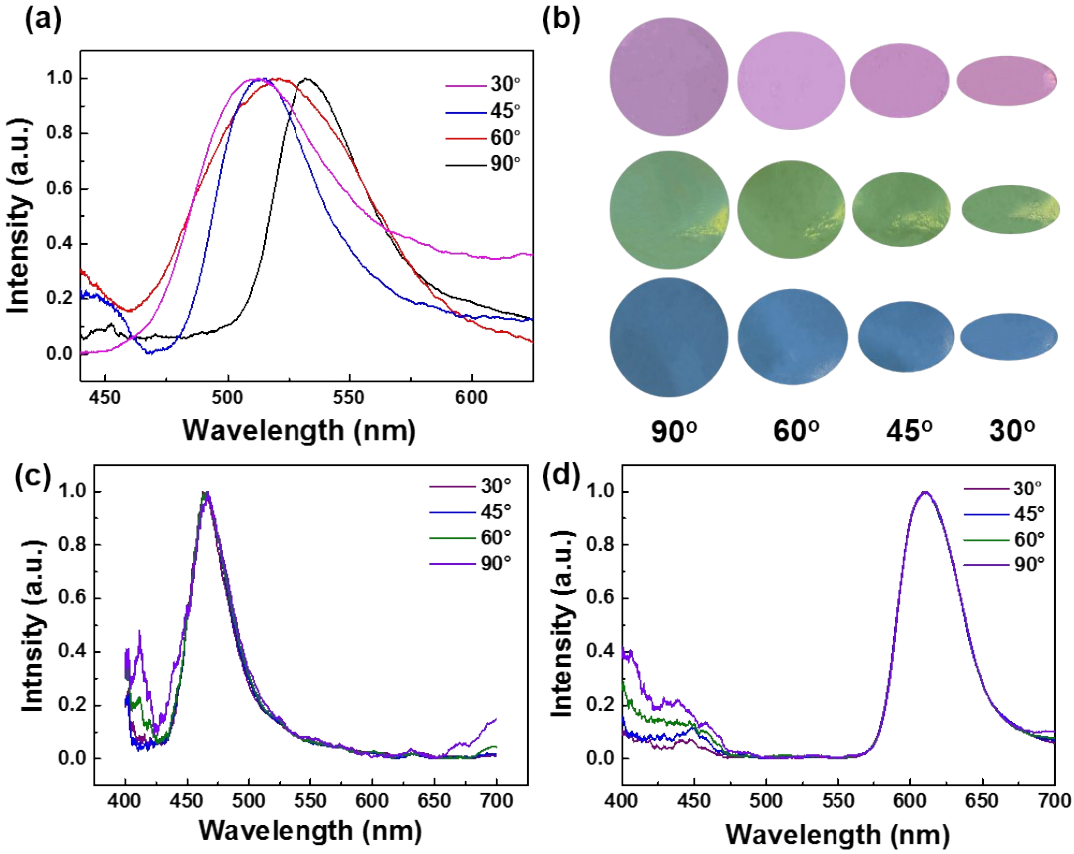

Fig. S3 (a) Normalized reflection peaks of P(St-AA)@PPy CPCs film prepared by scraping method of with reflection wavelength of 530 nm from different angles. (b) Optical photographs of P(St-AA)@PPy CPCs films prepared by MSAA method of different angles with different reflection wavelength of 465, 610 nm. (c-d) Normalized reflection peaks of P(St-AA)@PPy CPCs films prepared by MSAA method with reflection wavelength of 465 and 610 nm bending from 30° to 90°.

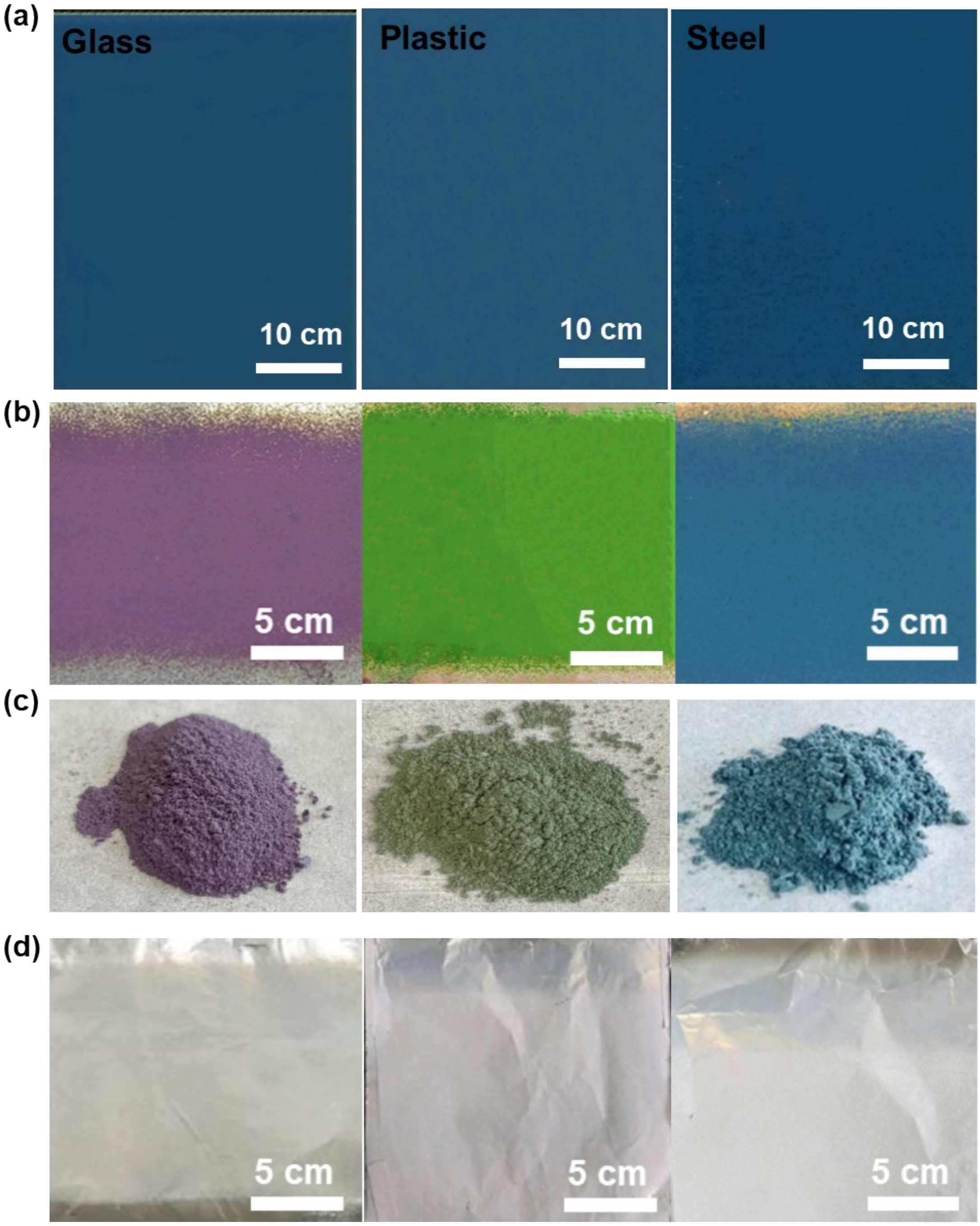

Fig. S4 (a) Preparation of films on glass, plastic and steel substrates by scraping method. (b) Preparation of P(St-AA)@PPy films by microfluidic electrostatic spraying. (c) Powder of P(St-AA)@PPy CPCs. (d) Preparation of P(St-AA) CPCs films by microfluidic electrostatic induction self-assembly.

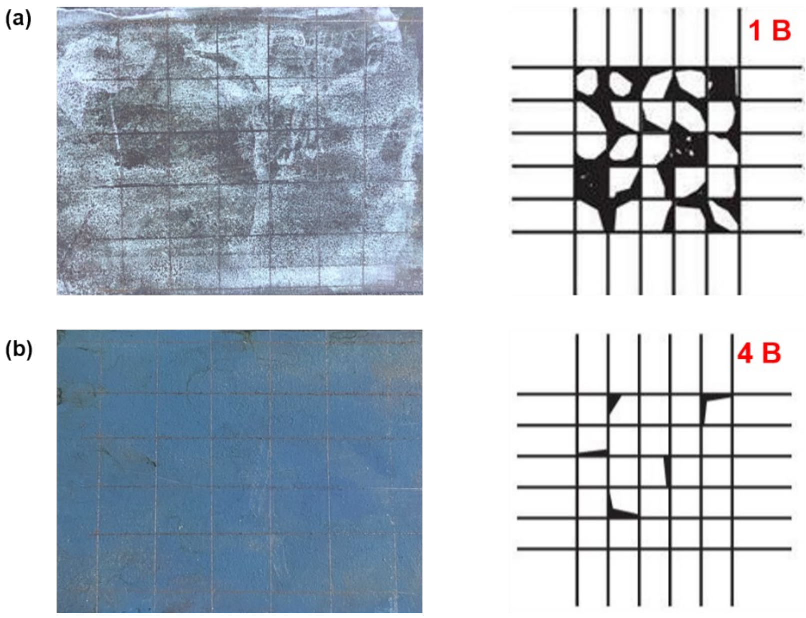

Fig. S5 Adhesion degree of (a) pure P(St-AA) and (b) P(St-AA)@PPy CPCs coating determined by scribe test.

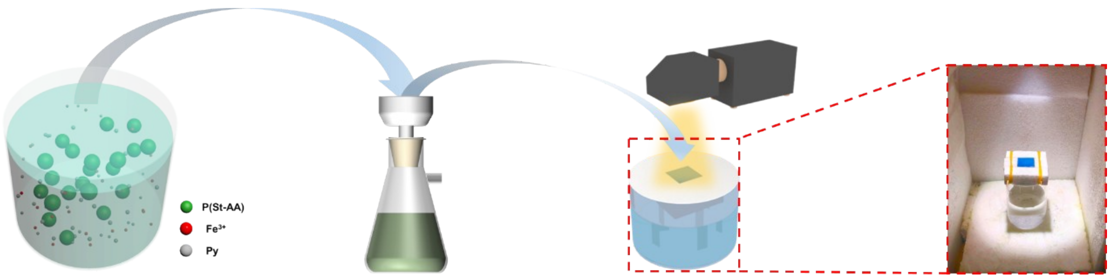

Fig. S6 Schematic and actual diagram of the water evaporation experiment.

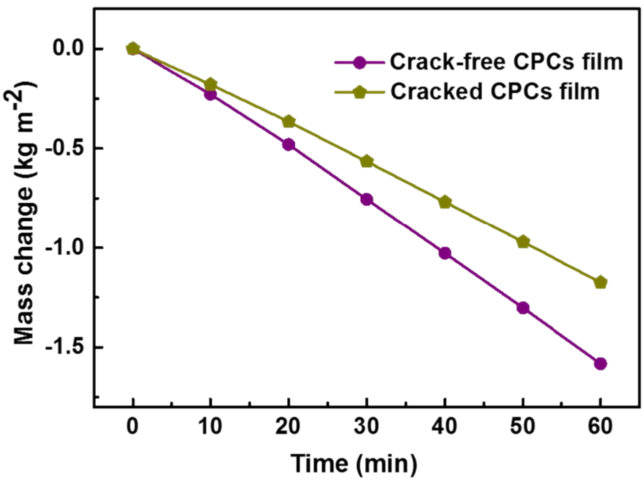

Fig. S7 Evaporation mass changes of the crack-free CPCs film and the cracked CPCs film under an optical density of 1 kW m^{-2}.

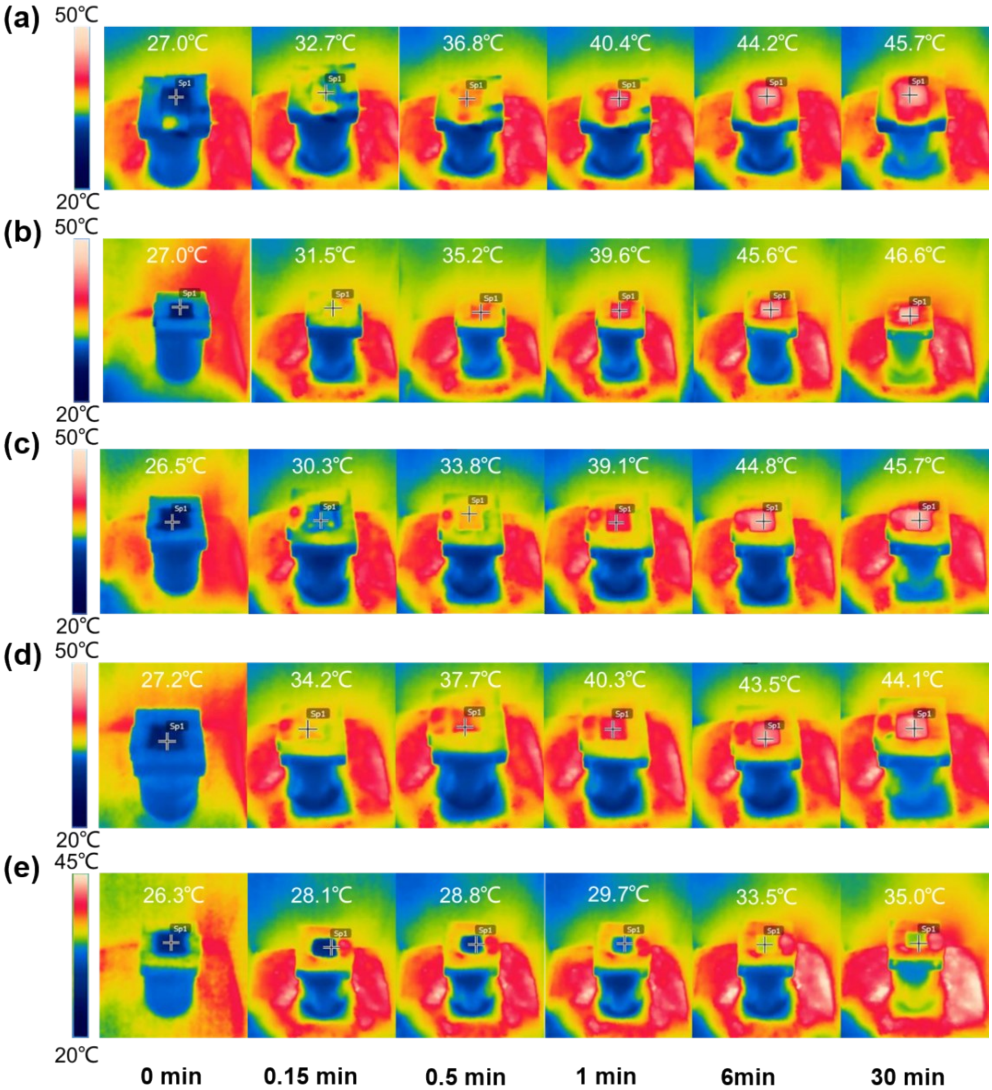

Fig. S8 During the water evaporation experiment, the infrared thermography of P(St-AA)@PPy CPCs films with reflection wavelength of 610 nm (a), 530nm (b) and 465 nm (c), pure PPy film (d) and blank film (e) within 30 minutes.

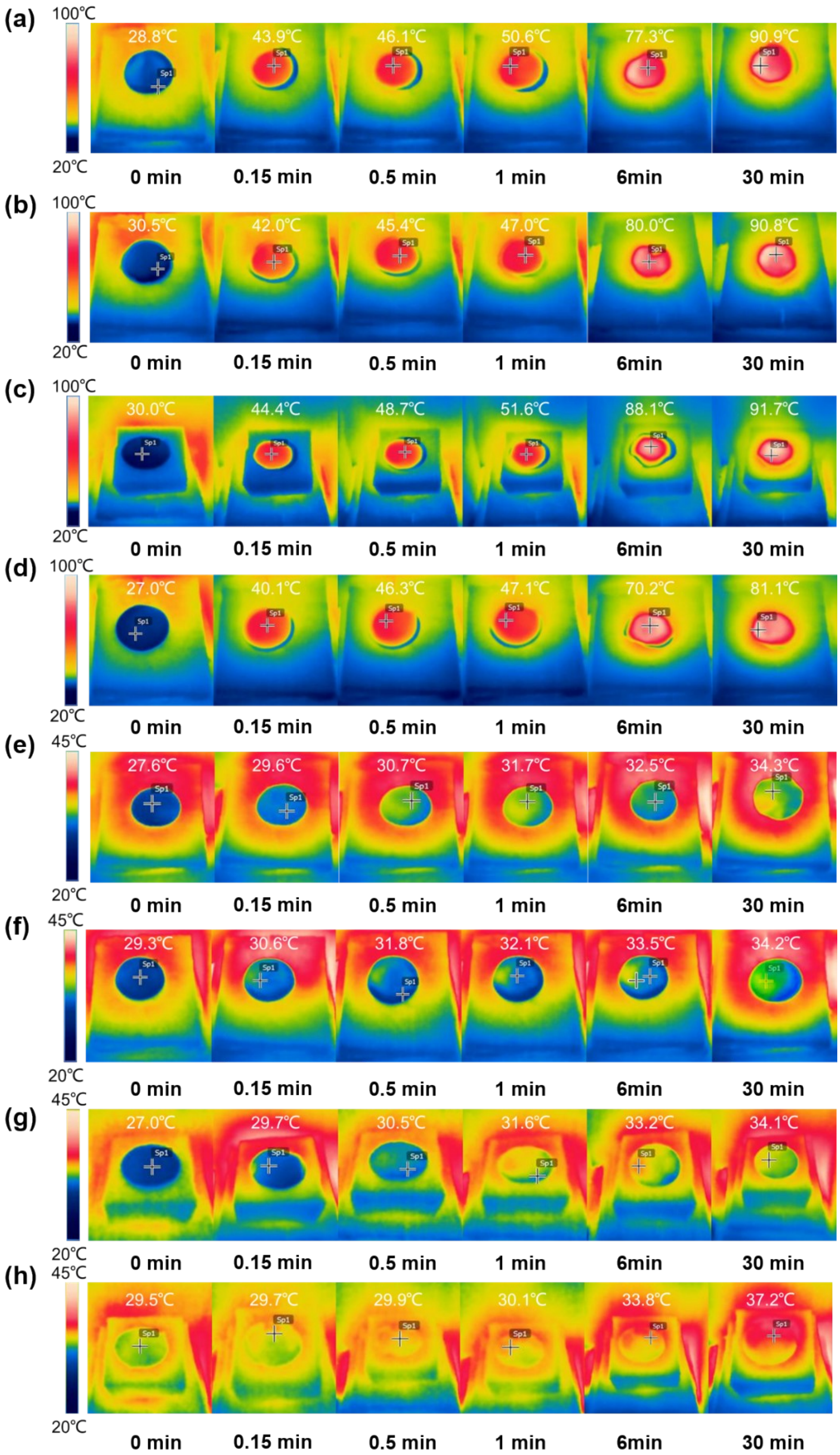

Fig. S9 Under dry conditions, the infrared thermography of P(St-AA)@PPy CPCs films with reflection wavelength of 610 nm (a), 530nm (b) and 465 nm (c), pure PPy film (d), P(St-AA) CPCs films with reflection wavelength of 610 nm (e), 530nm (f) and 465 nm (g), and blank film (h) within 30 minutes.