

Supporting information

**A novel kind of photo-regulated self-healing hydrogel based on
hollow SiO₂@g-C₃N₄@TiO₂ and PVA**

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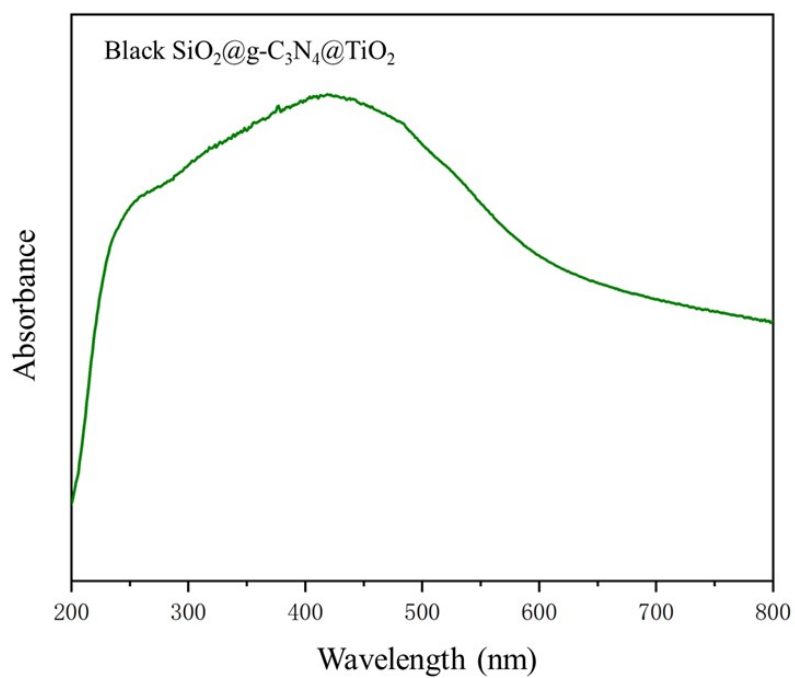
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Figure

S1. The UV-vis diffuse reflectance spectra of black $\text{SiO}_2@\text{g-C}_3\text{N}_4@\text{TiO}_2$ nanoparticles

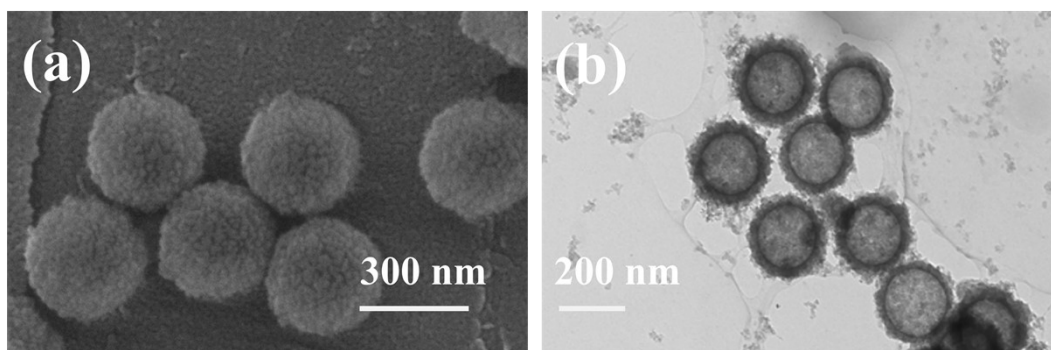


Figure S2. SEM and TEM images of the hollow $\text{SiO}_2@\text{g-C}_3\text{N}_4@\text{TiO}_2$ microspheres and reference samples.

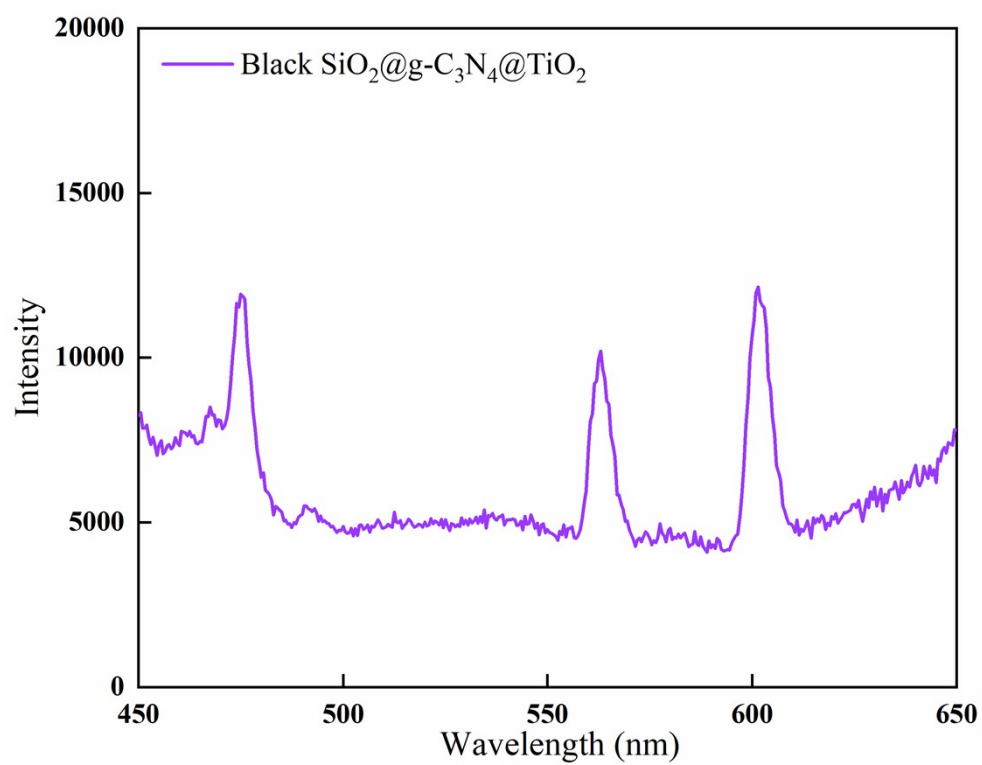


Figure S3. PL spectra of the black $\text{SiO}_2@\text{g-C}_3\text{N}_4@\text{TiO}_2$ nanoparticles.

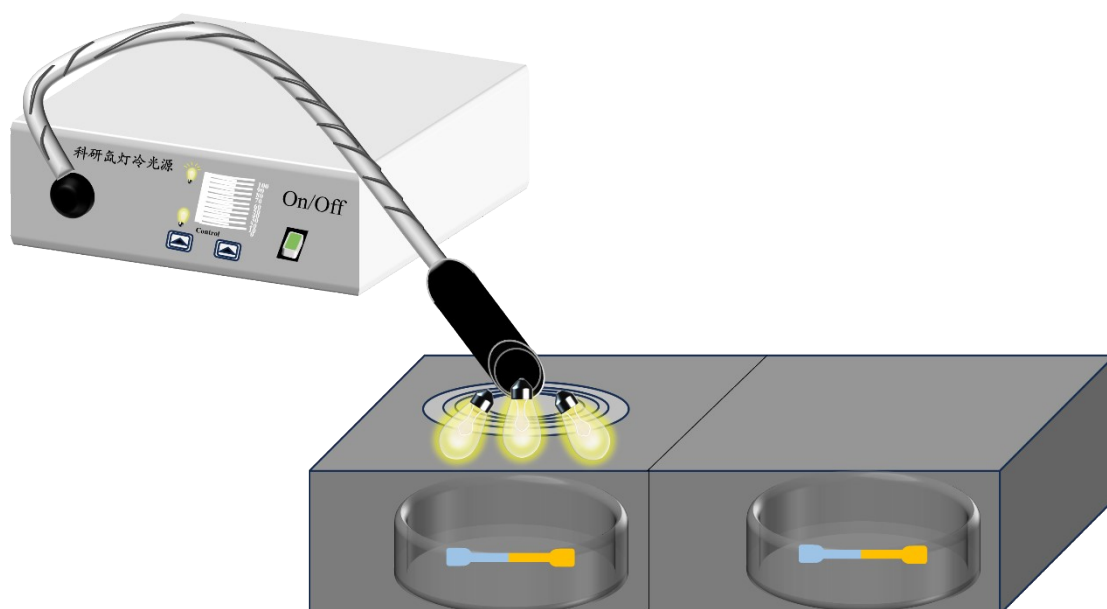


Figure S4. Test of self-healing performance of the PBCT hydrogels.

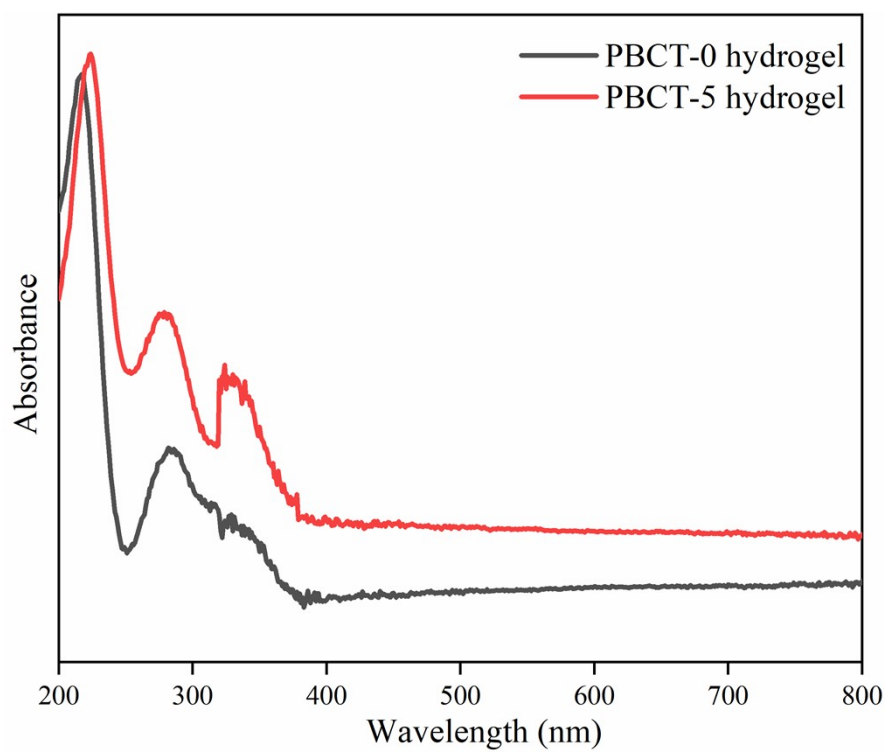


Figure S5. The UV-vis diffuse reflectance spectra of PBCT hydrogels.

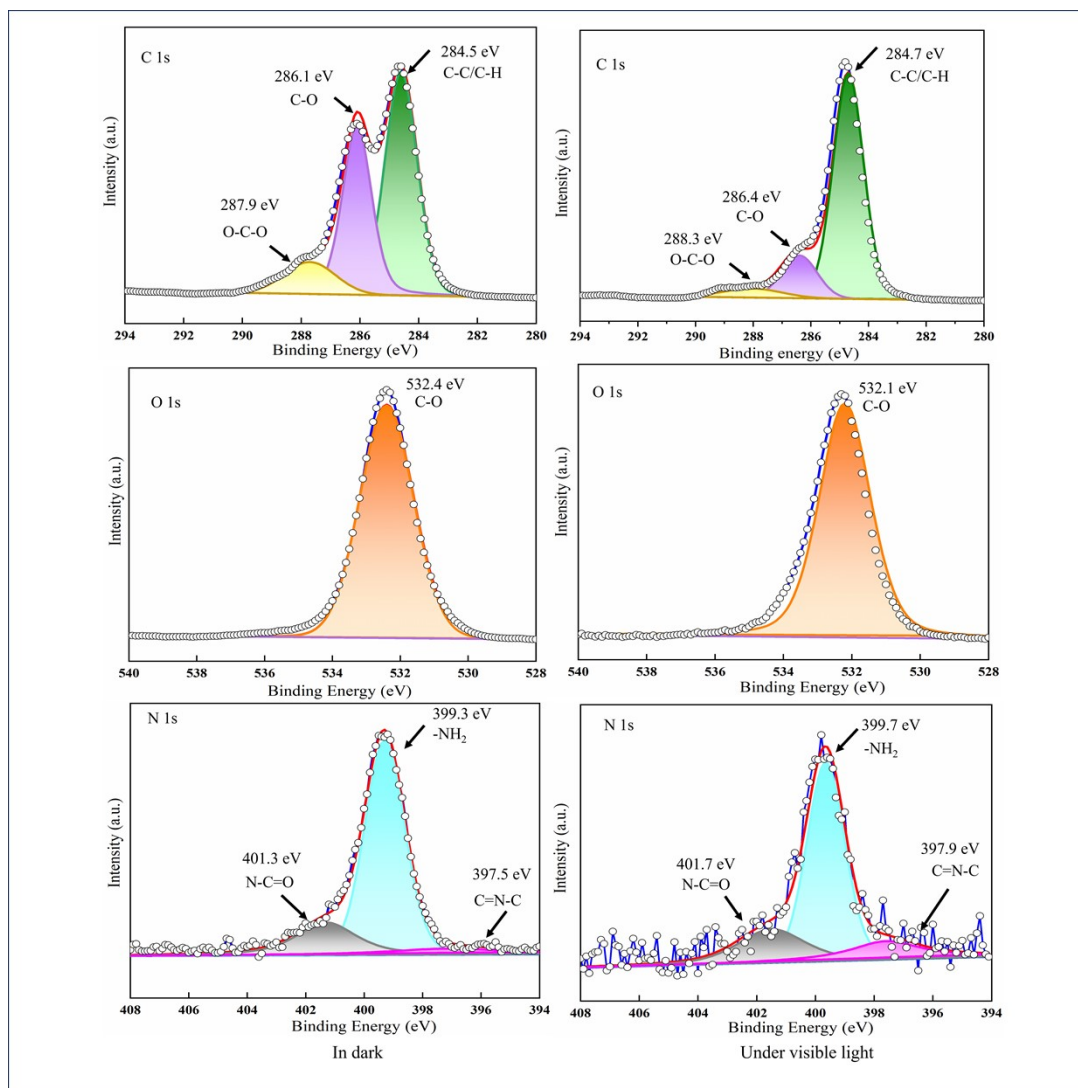
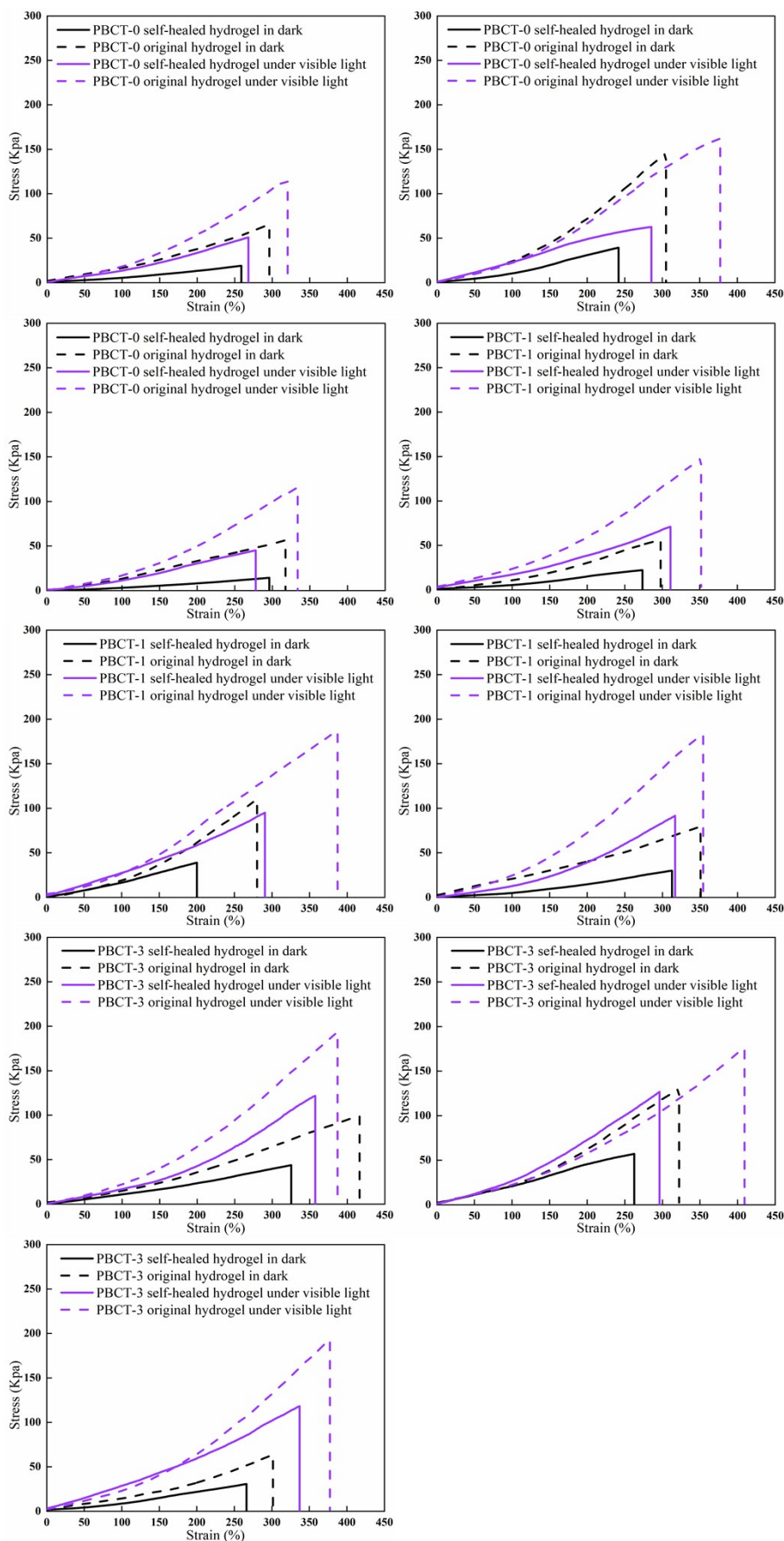


Figure S6. XPS spectra of the PBCT-3 hydrogel before visible light irradiation and after visible light irradiation.



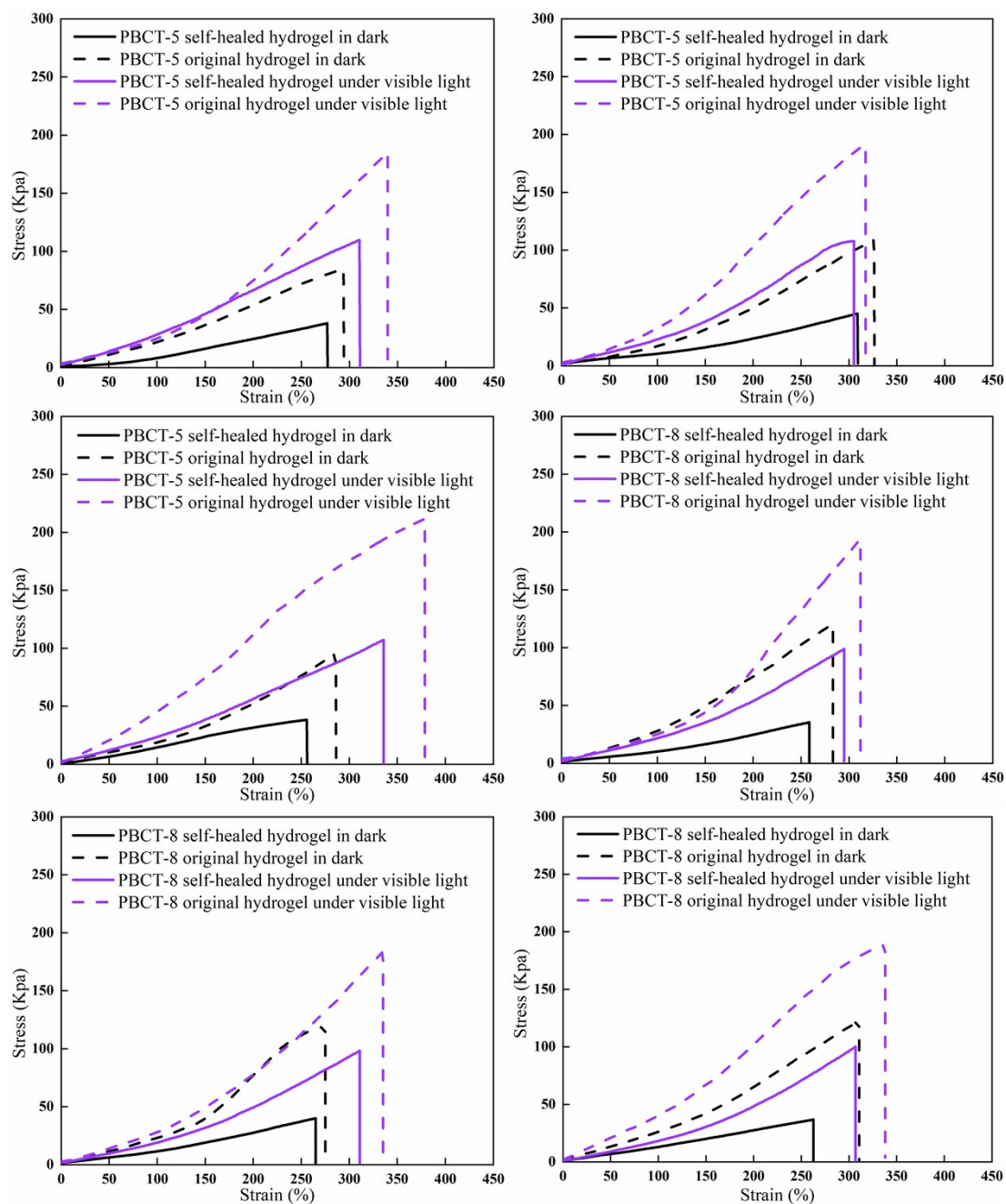


Figure S7. Stress-strain curves of the PBCT self-healed hydrogels with different amount of $\text{SiO}_2@\text{g-C}_3\text{N}_4@\text{TiO}_2$ nanoparticles.

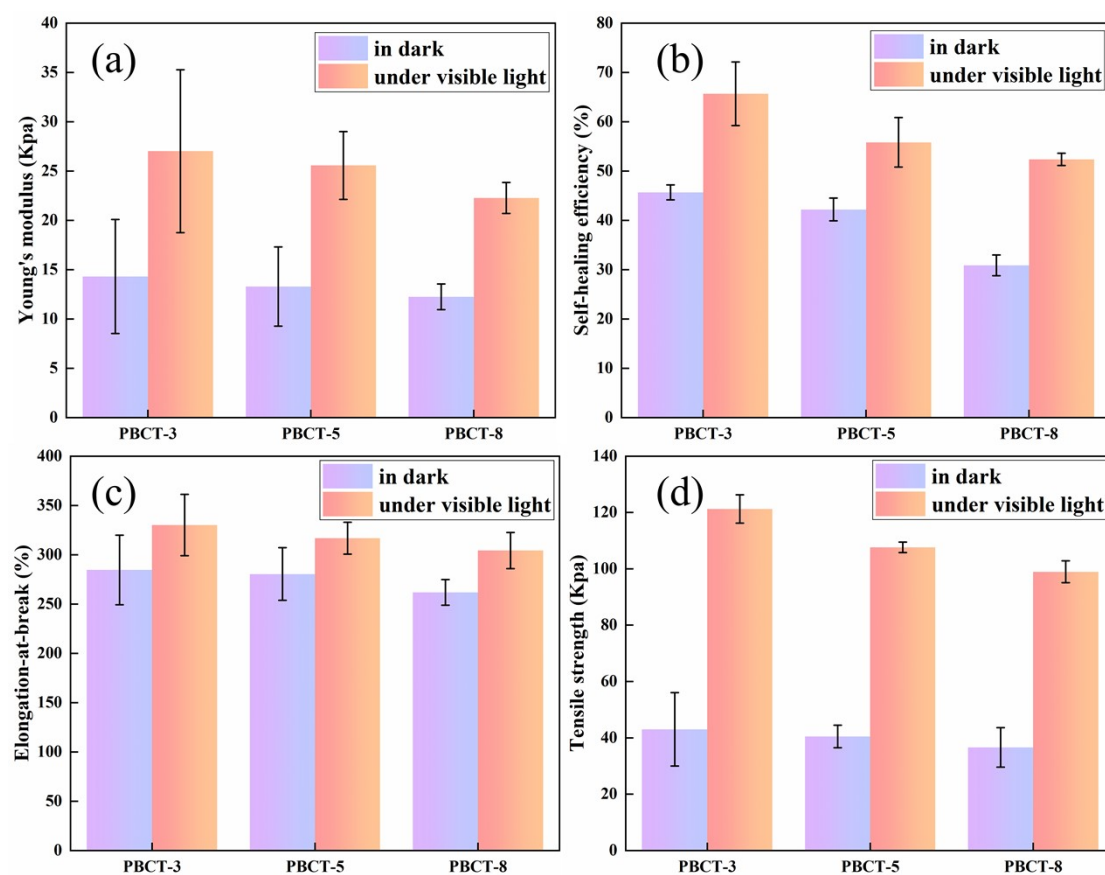


Figure S8. Effect of visible light irradiation on the self-healing of the PBCT-3, PBCT-5 and PBCT-8 samples.

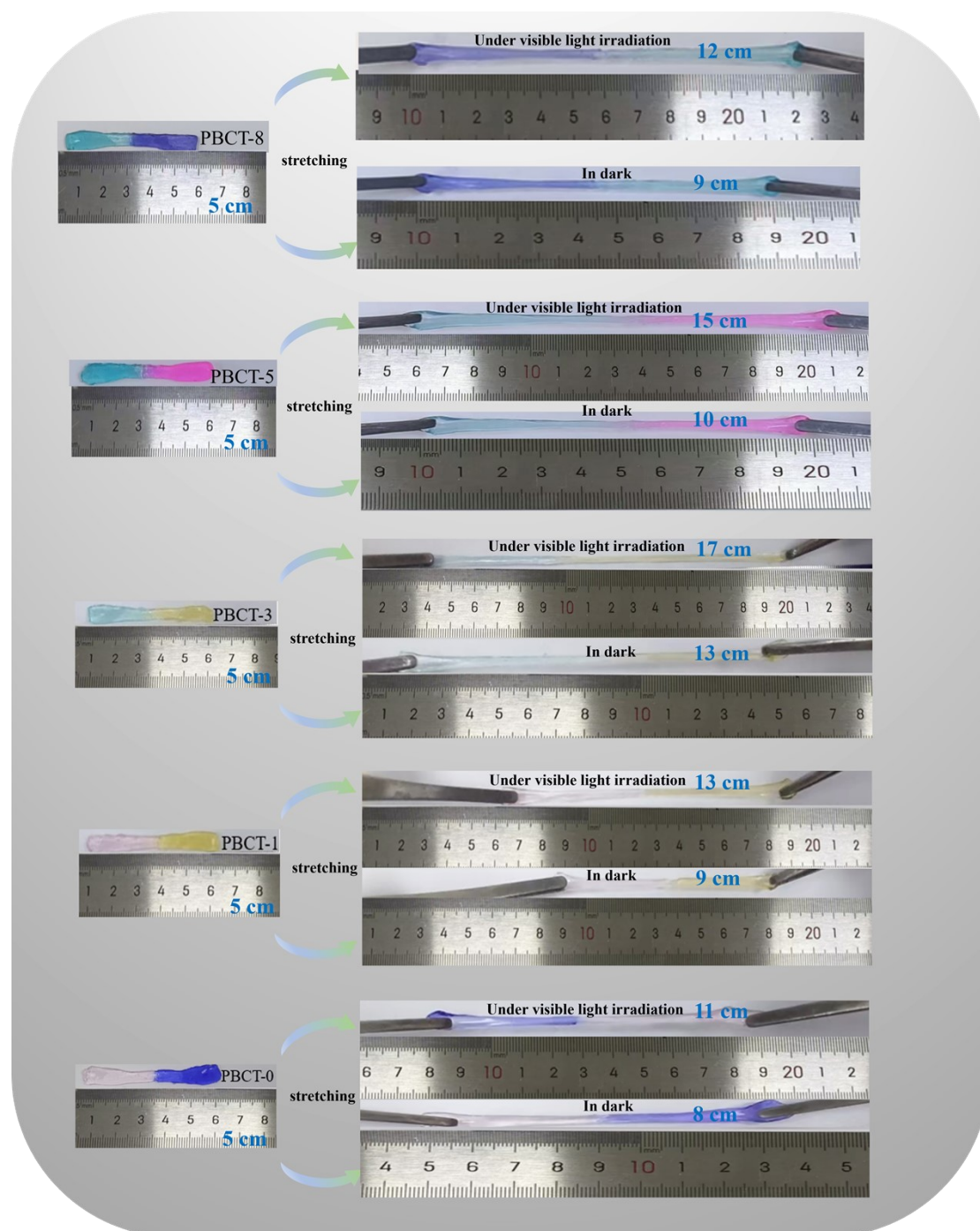


Figure S9. Photos of PBCT self-healed hydrogels for stretching in dark and under visible light irradiation respectively.