Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B. This journal is © The Royal Society of Chemistry 2020

## **Supporting Information**



**Figure S1.** (a) UV-vis absorption curve of silk fibroin; (b) Absorbance at 550 nm change of silk fibroin solution during natural gelation process.



**Figure S2.** Optical images of SF sol (a) and SF C-gel (b); SF C-gel exhibited blue fluorescence when irradiated with UV light while that did not happened to SF sol.

**Table S1.** Contents of  $\beta$ -components in SF solution, SF C-gel and SF P-gel.

	SF sol	SF C-gel	SF P-gel
β-sheet	18.90%	20.87%	35.67%
β-crystallite	12.86%	18.88%	41.41%



**Figure S3.** Fourier self-deconvolution (FSD) of the FTIR and XRD of SF solution (a, d), SF C-gel (b, e) and SF P-gel (c, f).



Figure S4. Catalytic mechanisms of all used enzymes.