Supplementary Information

Filtration-based water treatment system embedded with black phosphorus for NIR-triggered disinfection

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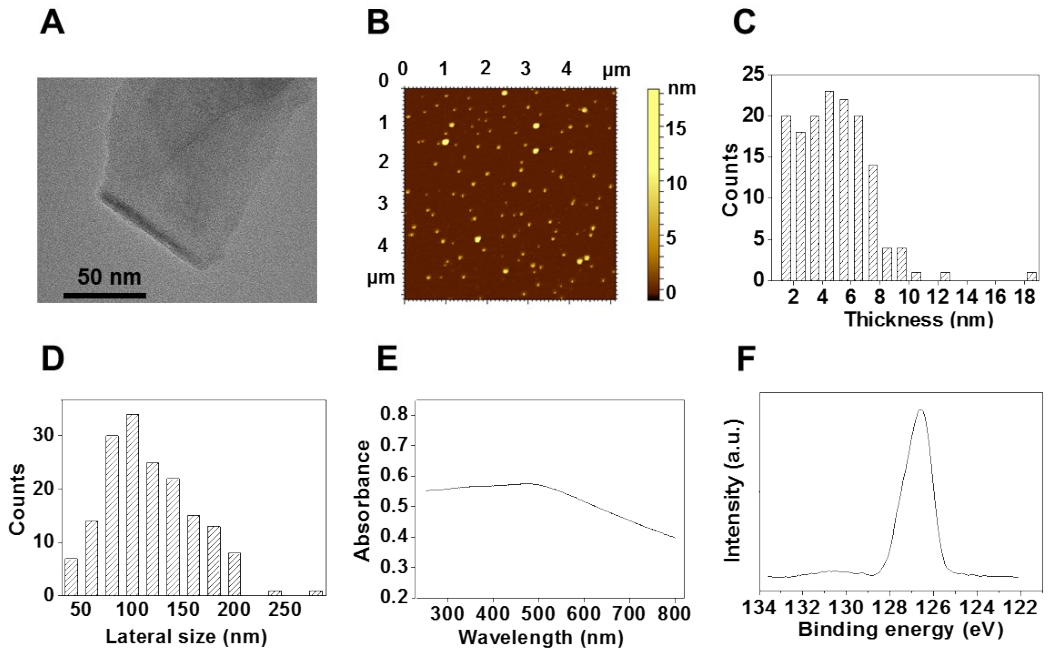

Figure S1. Characterizations of BP nanosheets. TEM (A) and AFM (B) images of BP nanosheets; thickness (C) and lateral (D) size distribution by statistical analysis of 100 pieces of BP nanosheets in AFM images; (E) UV−vis spectrum of BP aqueous suspension; (F) XPS spectrum of BP nanosheets.

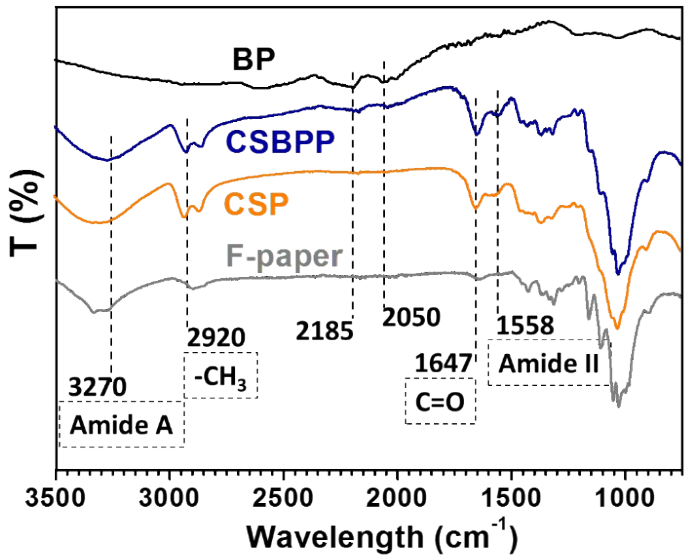

Figure S2. FTIR spectra of F-paper, CSP, CSBPP, and BP nanosheets.

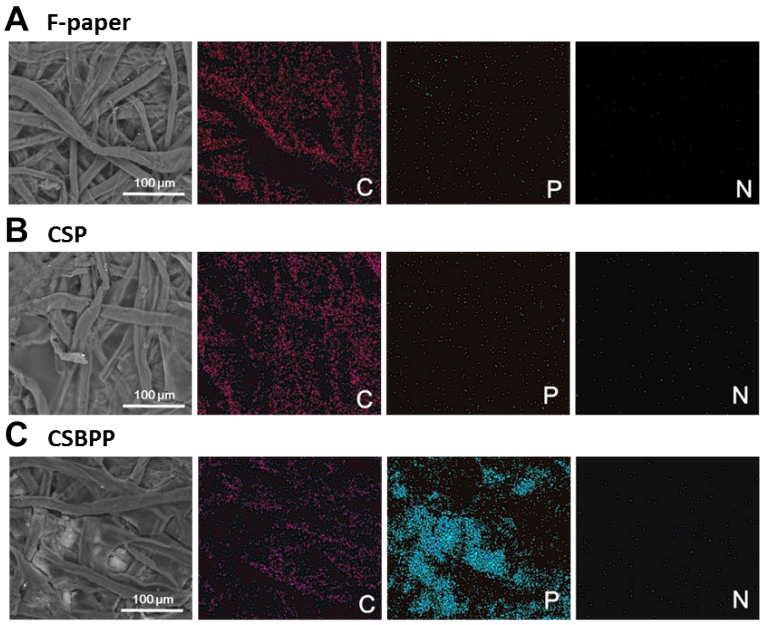

Figure S3. SEM images and EDX maps of C, P, N of F-paper (A), CSP (B), and CSBPP (C).

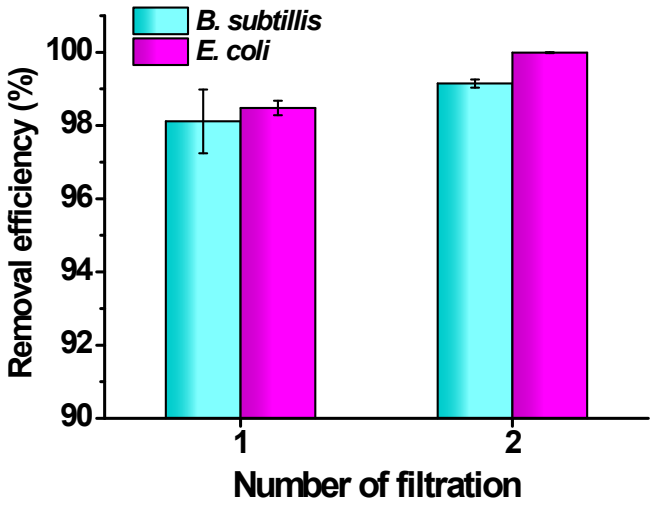

Figure S4. Removal efficiency for B. subtillis and E. coli after filtration by CSBPP for different times.

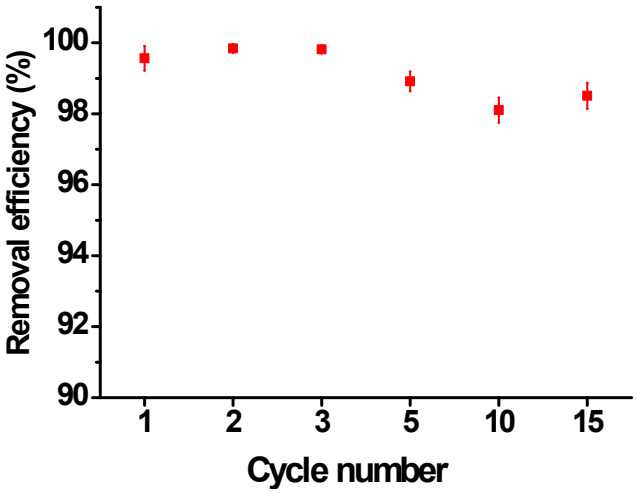

Figure S5. Removal efficiency of CSBPP for E. coli during different cycles of filtration.

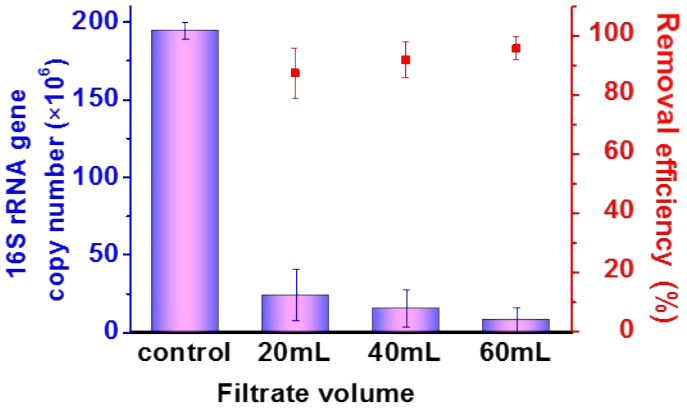

Figure S6. 16S rRNA gene copy number in the filtrate of river water filtered by CSBPP (control indicated the original sample without filtration).

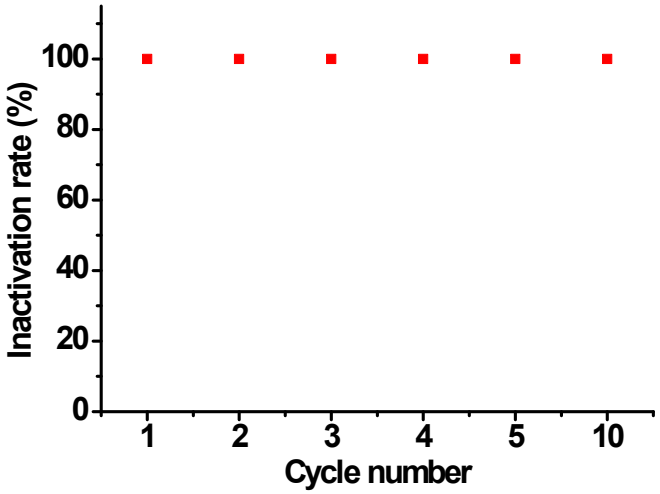

Figure S7. Bactericidal efficiency of CSBPP towards E coli over 10 cycles of NIR-triggered photothermal disinfection.

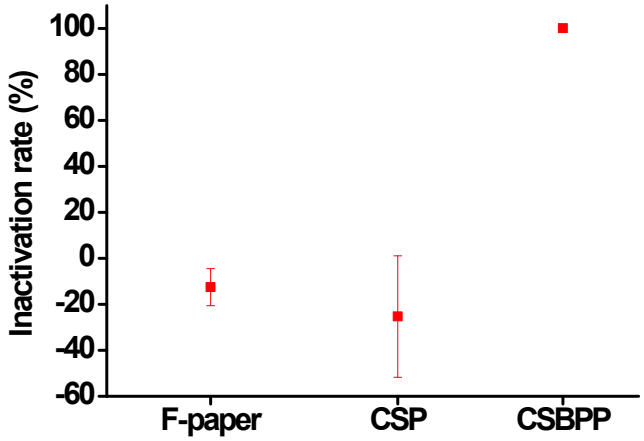

Figure S8. Bactericidal efficiency of CSBPP towards re-Amp. E. coli after exposure to NIR laser.

Table S1. The mass percentages of C, O, P, and N in F-paper, CSP, and CSBPP corresponding to EDX results.

	C [wt%]	O [wt%]	P [wt%]	N [wt%]
F-paper	43.87	55.02	0.08	1.04
CSP	49.73	46.79	0.12	3.37
CSBPP	47.34	32.52	17.95	2.19