Controllable stationary photocurrent generated from a bacteriorhodopsin/upconversion nanoparticles-based bionanosystem under NIR illumination

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**Figure S1.** EDS spectra of NaYF$_4$:Yb, Er (A) and NaYF$_4$:Yb, Tm (B) upconversion nanoparticles.

**Figure S2.** Photoluminescence spectrum of NaYF$_4$:Yb, Er suspension (A) and photocurrents of the bR/UCNPs bionanosystem prepared with NaYF$_4$:Yb, Er UCNPs (B).

**Figure S3.** Photoluminescence spectrum of NaYF$_4$:Yb, Tm suspension (A) and photocurrents of the bR/UCNPs bionanosystem prepared with NaYF$_4$:Yb, Tm UCNPs (B).
Figure S4. photocurrents of the ITO electrode and PM-deposited ITO electrode to green irradiation.