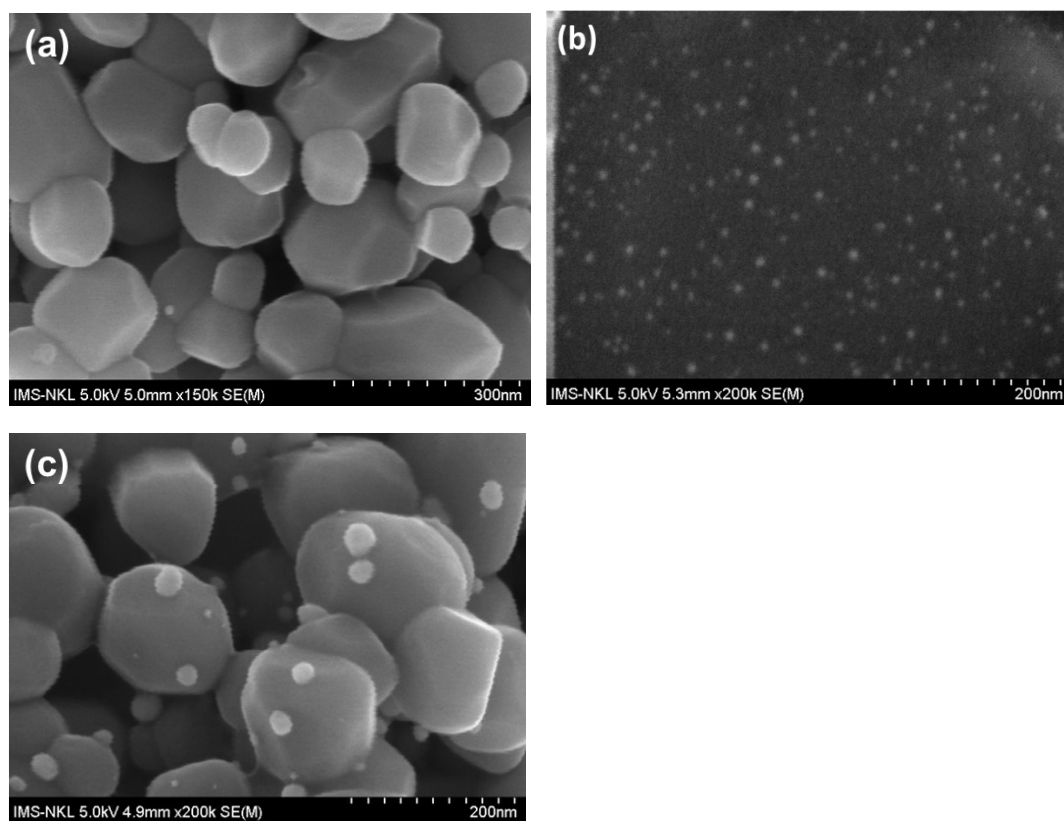


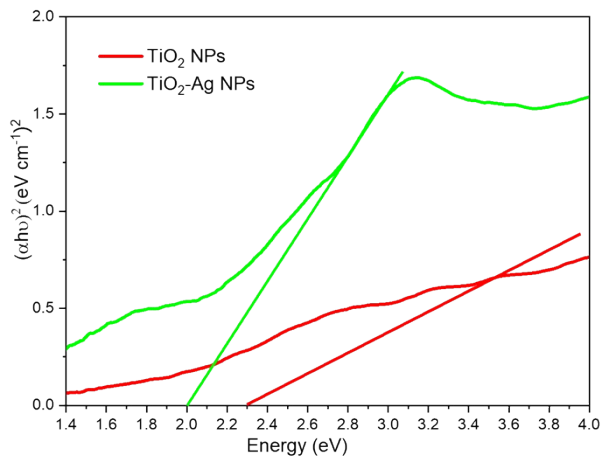
**Fig. S1.** Nitrogen adsorption –desorption isotherms (a), and Pore size distributions (b) of the as-fabricated EC



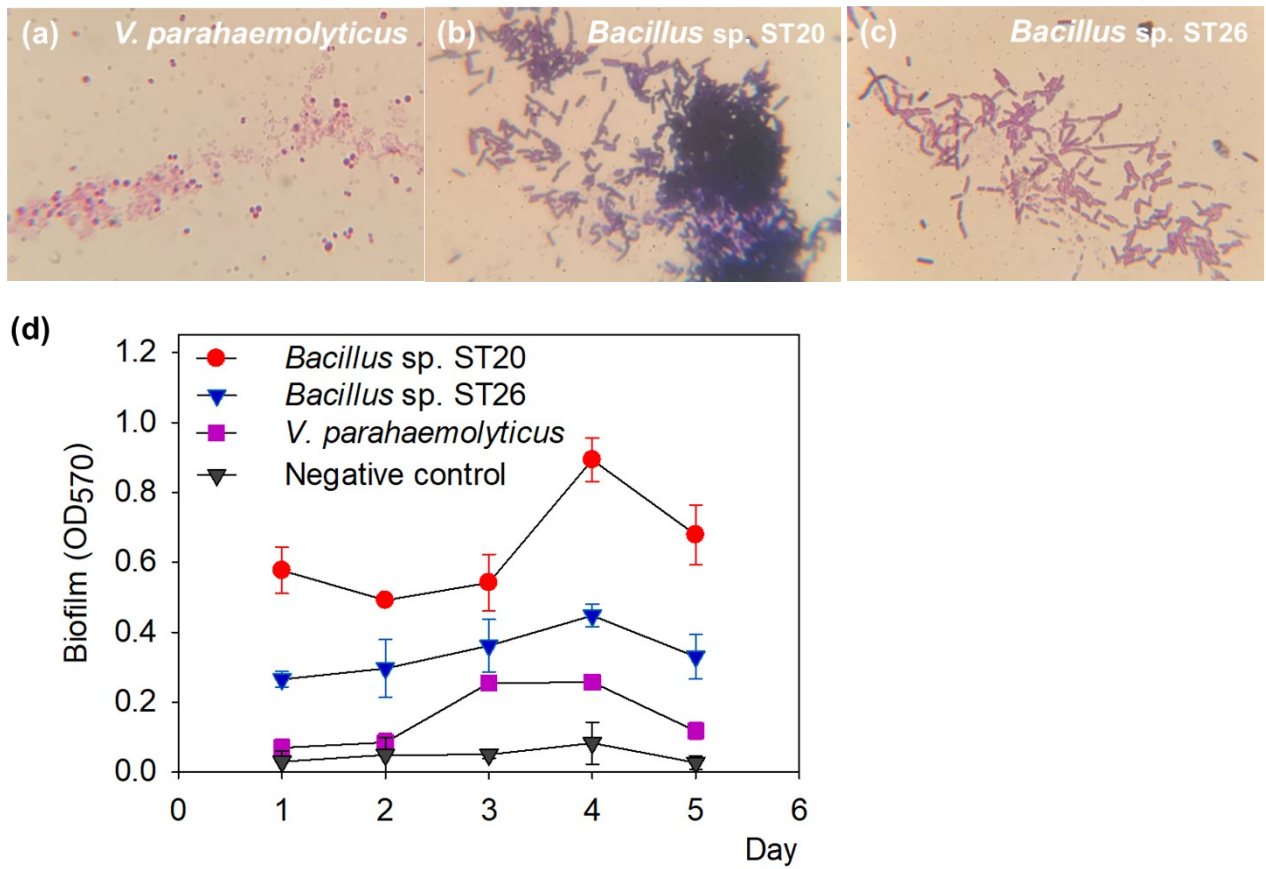
**Fig. S2.** FESEM images of the TiO<sub>2</sub>NPs (a), AgNPs (b) and TiO<sub>2</sub>-AgNPs (c).

**Table S1.** Properties of the synthesized TiO<sub>2</sub>, Ag and TiO<sub>2</sub>-Ag nanoparticles.

	Size (nm)	Zeta potential (mV)	Concentration (ppm)
TiO <sub>2</sub>	97.75 ± 11.06	-47.2 ± 6.42	4976.82 ± 45.20
Ag	25.29 ± 3.61	-35.51 ± 13.10	185.49 ± 14.63
TiO <sub>2</sub> -Ag	458.90 ± 18.51	-43.70 ± 1.12	Ti: 4852.51 ± 23.72 Ag: 194.58 ± 6.29



**Fig. S3.** band gap energy of TiO<sub>2</sub>-AgNPs



**Fig. S4.** Gram identification of *V. parahaemolyticus* pathogen (a), denitrifying *Bacillus* sp. ST20 (b), denitrifying *Bacillus* sp. ST26 (c) and bacteria biofilm-forming capacity (d). For panels a, b, and c, the cells that appeared in pink color belongs to the Gram-negative group while the cells stained violet belonged to the Gram-positive group.