Supplementary Material

Zeolitic imidazolate framework-67 in chitosan-grafted hydrogel as an effective catalyst for peroxymonosulfate activation to degrade antibiotics and dyes

Text S1.

The functional groups of chitosan-g-PAA hydrogel and the ZIF-67 composite hydrogel were studied using attenuated total reflection Fourier transform infrared (FTIR) spectroscopy (Bruker, Tensor 27, Germany). Field emission scanning electron microscopy in conjunction with energy-dispersive X-ray spectroscopy (FESEM–EDS) was used to analyze the morphology of the composite hydrogel. Thermal analysis of the samples was performed using a thermogravimetric analyzer (DTG–60H, Shimadzu, Japan) under a nitrogen atmosphere at a heating rate of 10 °C/min. The crystallinity of the samples was analyzed using an X-ray diffractometer (XRD, EMPYREAN, PANalytical, United Kingdom). The surface elemental composition and oxidation state of the composite hydrogel was analyzed using X-ray photoelectron spectroscopy (XPS, PHI5000 VersaProbe II, ULVAC-PHI, Japan). The concentration of Co^{2+} was analyzed using an atomic absorption spectrophotometer (AAS, PerkinElmer, FIAS 100, USA). The absorbances of TC and other antibiotics were measured using a UV-Vis spectrophotometer (Agilent 8453, USA). Electron paramagnetic resonance (EPR) spectroscopy (Bruker, ELEXSYS500, Germany) was used to determine the radicals generated in the degradation process.

Figure S1. TGA and corresponding DTG thermograms of the chitosan-g-PAA hydrogel and the ZIF-67 composite hydrogel.

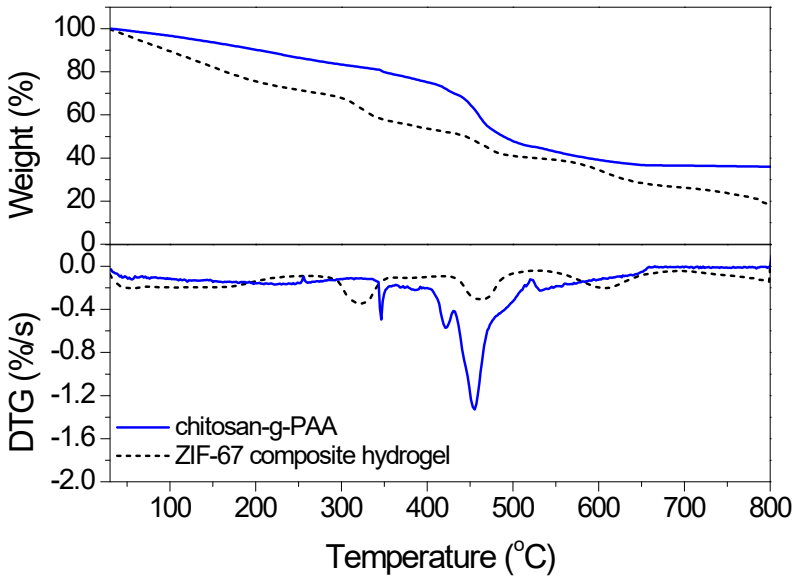

Figure S2. XRD patterns of the chitosan-g-PAA hydrogel and the ZIF-67 composite hydrogel.

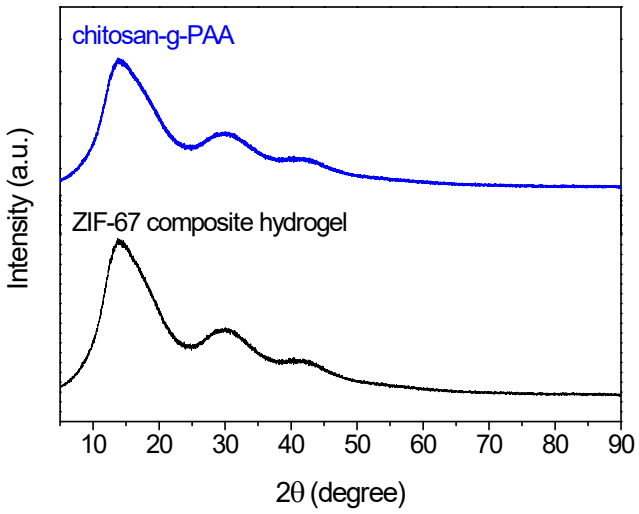

Figure S3. FTIR spectra of the fresh ZIF-67 composite hydrogel and the composite hydrogel after five cycles.