Supporting Information for:

Photocatalytic Removal of U(VI) from Wastewater via Synergistic Carbon-Supported Zero-Valent Iron Nanoparticles and *S. Putrefaciens*

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List of Supporting Information

SEM images of C60, CNT and GR. Figure S1 showed the typical surface morphology of low-dimensional carbon materials, such as clumped C60 (Figure S1A), tubular CNT (Figure S1B), and nano-sheet GR (Figure S1C).

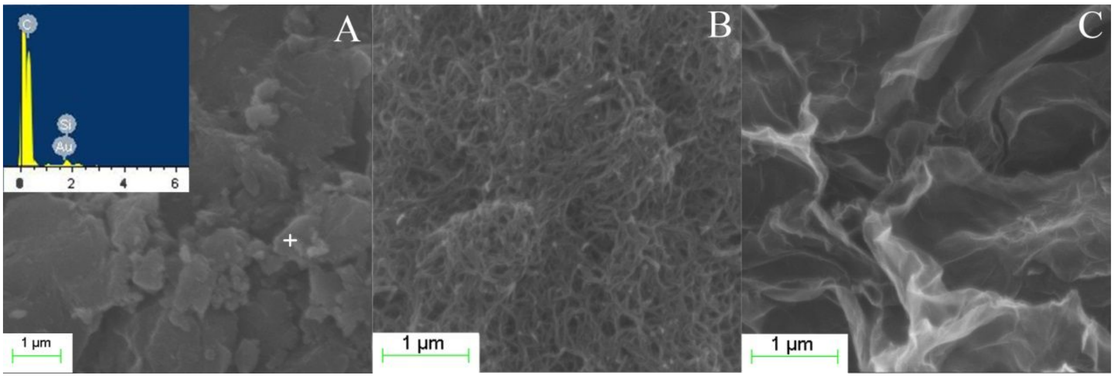

Figure S1: SEM images of C60 (A), CNT (B) and GR(C).

Cyclic Utilization Efficiency. In order to test the stability of bio-nZVI-CNT materials, U(VI) cyclic removal experiments have been investigated under the condition of T = 20 ºC, t = 2 h, pH = 5, C_0 = 50 mg/L (100mL), and m = 22 mg. Results in Figure S2A indicated that the efficiency decreased along with the increase of cyclic times (From 95.8% to 18.2%). A possible explanation for this is that nZVI of materials could be largely consumed and translated into iron oxide during the process of U(VI) reduction reaction. Moreover, Fe leaching rate in the removal cycles have been tested, and Figure S2B presented that no more than 20% Fe were leached in four cyclic times totally, which means bio-nZVI-CNT possess high stability in U(VI) removal.

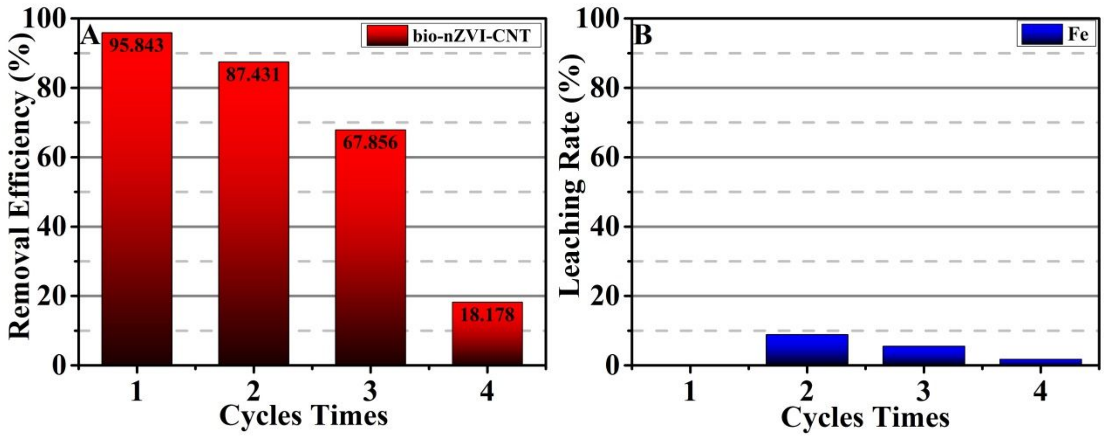

Figure S2. Cyclic utilization efficiency of bio-nZVI-CNT materials (A), Fe leaching rate on cycles (B).

pH Changes Before and After Reaction. Figure S3 showed pH variation of bio-nZVI-CNT system before and after reaction with U(VI). An increased pH value was observed at pH < 7, suggesting more H+ was consumed after reaction. However, more OH- was consumed for this system at pH > 7, which resulted in decreased values of pH after reaction.

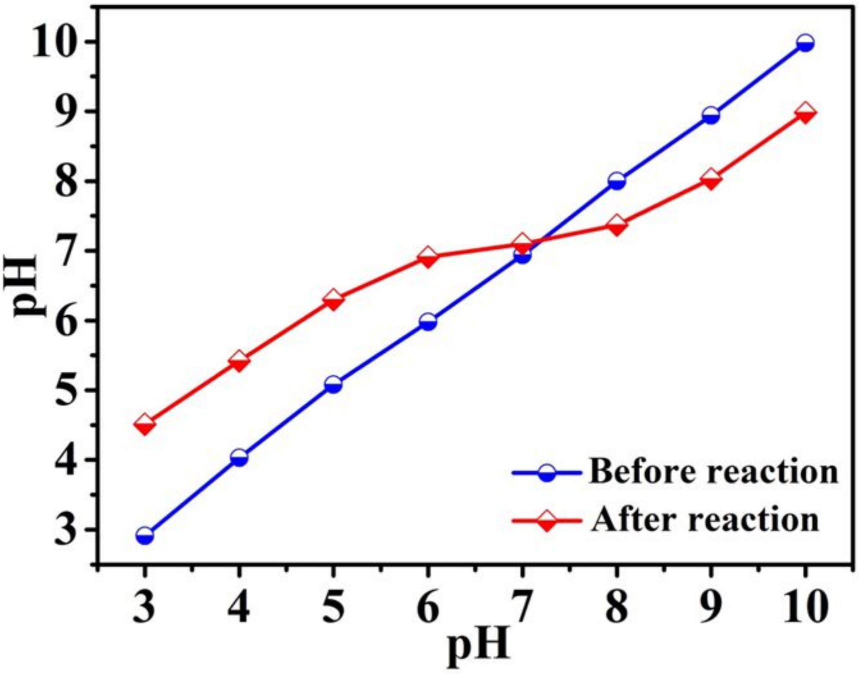

Figure S 3. pH variation of bio-nZVI-CNT before and after reaction with U(VI)

U(VI) species

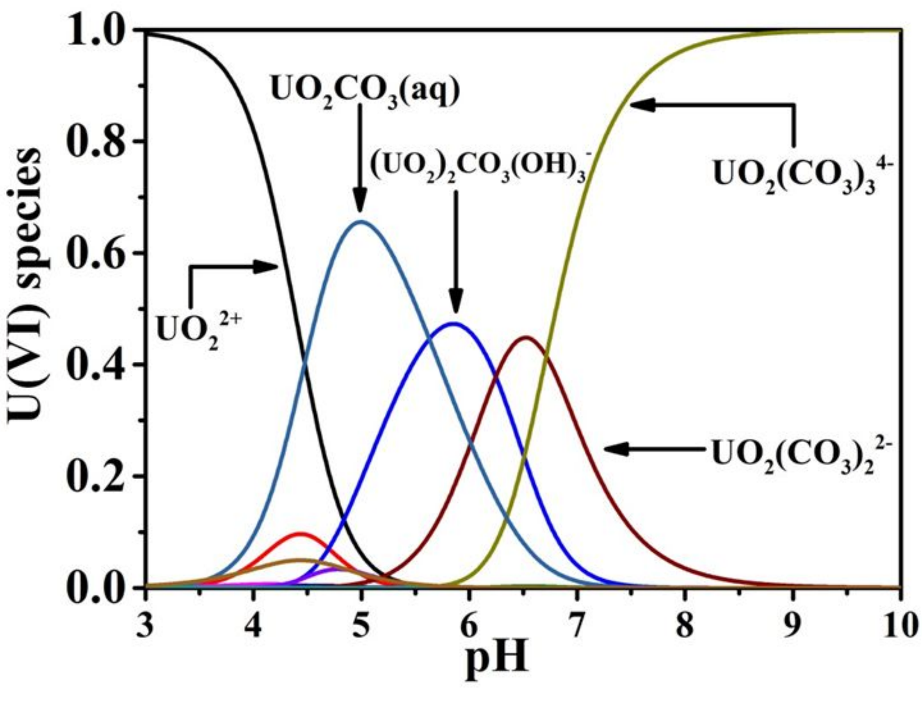

Figure S4. U(VI) species at different pH

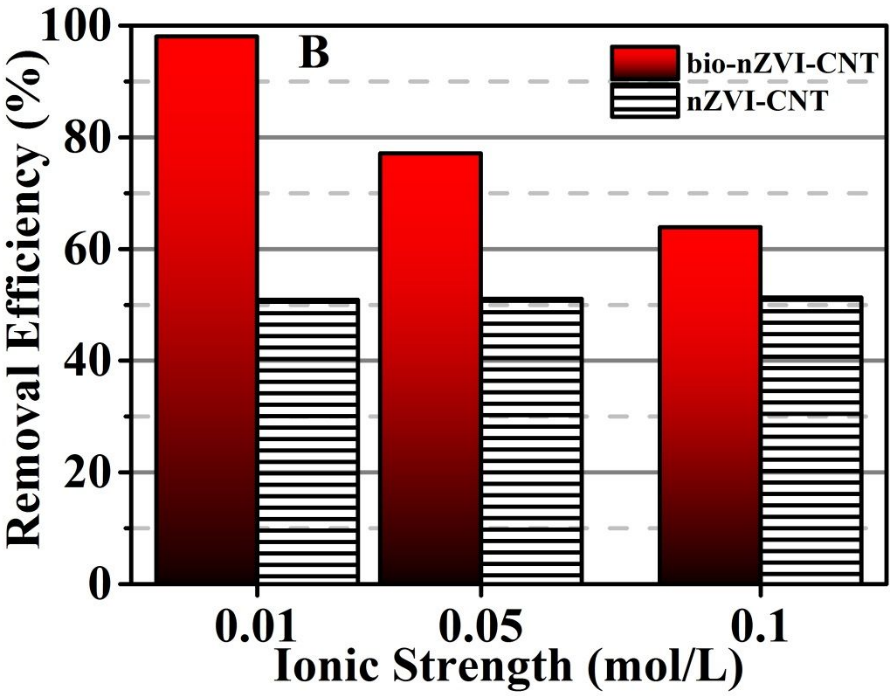

Figure S5. efficiency comparison between nZVI-CNT and bio-nZVI-CNT materials under different ion strength