The interplay of iron minerals and microflora to accelerate Cr (VI) reduction

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1. *Electrochemical analysis*

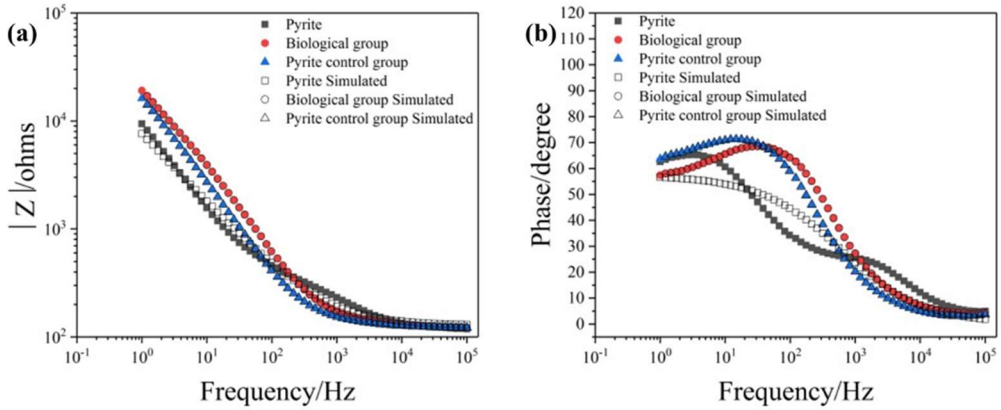

Figure S1. Bode plots of pyrite before and after treatment with or without chromium solution.

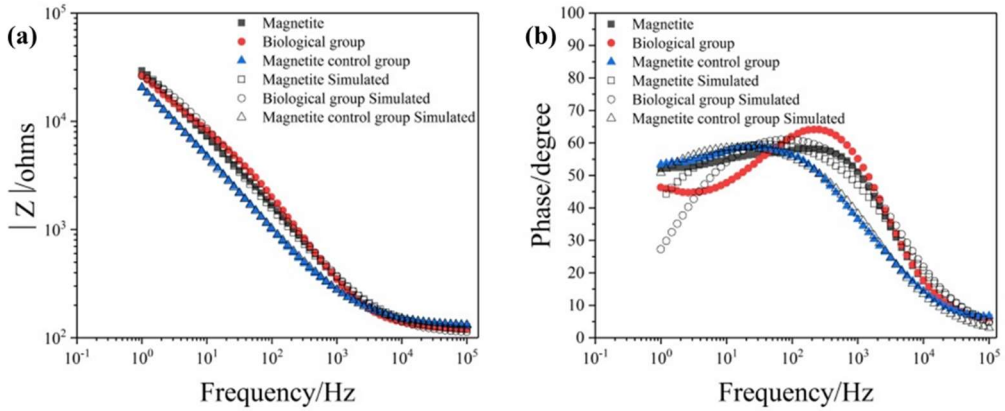

Figure S2. Bode plots of magnetite before and after treatment with or without chromium solution.

2. Changes in microbial community structure

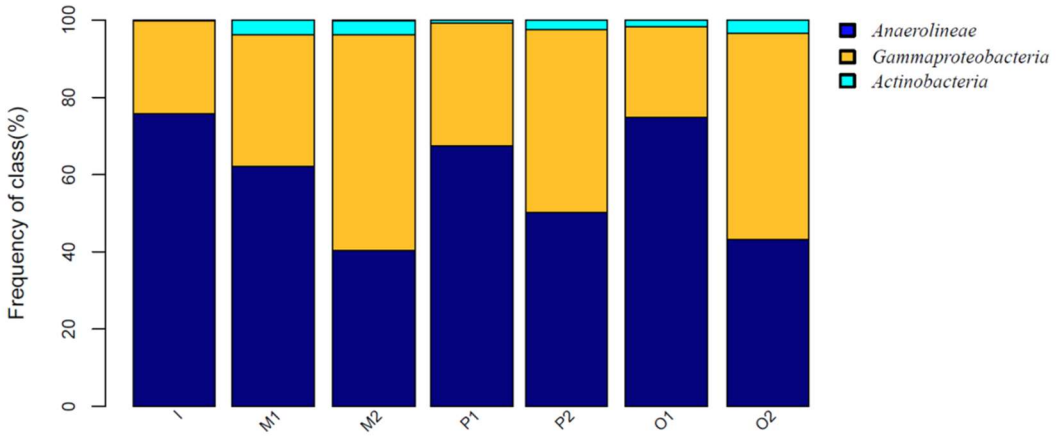

Figure S3. Relative abundance of phyla in different Cr(VI) reduction systems ("M" means magnetite, "P" means pyrite, "O" means iron-free, "I" means initial bacteria, "1" means 32 h, "2" means 77 h).

At the phylum level, the initial microbial community (I) was mainly composed of *Anaerolineae* and *Proteobacteria*. In the process of Cr (VI) reduction, the microbial community structure changed with the change in environmental factors. According to the literature, extracellular respiratory bacteria mainly exist as *thick-walled bacteria* and *proteobacteria*. As shown in Fig. S 3, the addition of iron ore significantly changed the composition of the original microbial community. As the experiment progressed, the relative content of *Proteobacteria* and *Actinobacteria* increased, while the relative content of *Anaerolineae* decreased. This may be because Cr (VI) can play a directional screening role so that the content of dominant bacteria gradually increases, resulting in changes in the microbial community structure in the system.