

Scale-up of the production of highly reactive biogenic magnetite nanoparticles using *Geobacter sulfurreducens*

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The data contained within this data set is arranged according to the Figure number as it appears in the manuscript. Full details identifying the x- and y-axes are included in the tab delineated .txt files:

Figure_1a.txt - Growth rate of *Geobacter sulfurreducens* with varied electron donor: acceptor ratios

Figure_1b.txt - Fe(III) reduction rates of bacteria produced on varied electron donor: acceptor ratios

Figure_1c.txt - XRD of the products of microbial reduction of ferrihydrite by *Geobacter sulfurreducens*

Figure_2.txt - Growth of *Geobacter sulfurreducens* in a 5 l bioreactor

Figure_3a.txt - *G. sulfurreducens* Growth curves in 100 ml bottles

Figure_3b.txt - *G. sulfurreducens* Growth curves in 5 l bioreactor

Figure_3c.txt - *G. sulfurreducens* Growth curves in 50 l bioreactor

Figure_4a.txt - Change in Fe(II)/Fe(Total) over time

Figure_4b.txt - XRD of the products of microbial reduction of ferrihydrite by *Geobacter sulfurreducens* in different volume containers

Figure_5a.txt - X-ray absorption spectra (XAS) of samples obtained through microbial reduction of ferrihydrite by *Geobacter sulfurreducens* in different volume containers

Figure_5b.txt - X-ray magnetic circular dichroism (XMCD) of samples obtained through microbial reduction of ferrihydrite by *Geobacter sulfurreducens* in different volume containers

Figure_6.txt - Biogenic magnetite reactivity with Cr(VI)

Included in Supplementary Information

Figure_S2.pdf - Transmission electron microscopy imaging of end product of Fe(III)- reduction by *Geobacter sulfurreducens*. (a) 10 ml volume vessel, (a-i) image displays spherical particles, most likely magnetite, (a-ii) electron diffraction indicates presence of magnetite (red) and hematite (green), (a-iii) hematite crystal clearly distinguishable from spherical magnetite. (b) 10 L volume vessel sample. (b-i) spherical magnetite of similar size to 10 ml samples, (b-ii) electron diffraction indicates presence of hematite (green), magnetite (red) and siderite (blue); (b-iii) several crystals were observed which were much larger than the relative size of the magnetite that have been attributed to siderite.

Figure_S3a.txt - Mössbauer spectroscopy of biogenic magnetite produced in 100 ml volume vessel

Figure_S3b.txt - Mössbauer spectroscopy of biogenic magnetite produced in 10 l volume vessel