

Editor Initial Decision: Publish subject to technical corrections (14 Aug 2014) by Tina Treude

Comments to the Author:

Dear Karin Eusterhues and Co-workers,

after intensely reading through your revision and answers to reviewers I found your manuscript publishable after just some very minor technical correction. Please find the details below.

Best wishes

Tina Treude

BG Editor

Dear Dr. Treude,

That is good news. Thank you for your time and input!

Below we explain how we followed your suggestions. Please contact me, in case anything remained unclear.

Kind regards,

Karin Eusterhues

Minor technical points:

L23: Ferrihydrite (not ferrihydrite) at the beginning of the sentence.

Was corrected accordingly

L29: Please provide subject for "this", e.g., "this difference".

We changed the sentence into: "At small organic matter loadings the poor crystallinity of coprecipitates led to even faster Fe reduction rates than found for pure ferrihydrite."

L54: Please provide a subject for "their", e.g., "the aggregation behavior of coprecipitates".

We changed the sentence into: "Likewise, the aggregation behavior of ferrihydrites may be affected".

L99: are = were

Was corrected accordingly

L105: I suggest a short introduction of "Oa" and "Oe". Part of our readers are working in marine research (like me).

These layers represent the fermented and humified organic horizons below the fresh plant litter, but above the mineral soil.

L124: C/Fe ratio

Was corrected accordingly

L127: C/Fe ratio

Was corrected accordingly

L153: "1.6, 1.6, and 1.1" Correct (2 x 1.6)?

We did not change the sentence, because we believe that it is easier to understand that we are talking about 4 peaks in a row, when we write "1.6, 1.6, and 1.1"

"The distances between the peaks were fixed to 1.6, 1.6, and 1.1 eV from lower to higher binding energies to..."

L248-250: Start sentence with "We assume that the nitrate...."

We changed the sentence into: "[We assume that the nitrate contamination does not affect our microbial reduction experiments, because *Geobacter bremensis* is not able to reduce nitrate (Straub et al., 1998; Straub et al., 2001).]"

L319 comparable = similar

We changed the sentence into: "Also, samples of the coprecipitation series were more reactive than samples of the adsorption series, when comparing samples with similar organic matter contents."

L361-366: I have trouble understanding this sentence, probably because of its length. Please simplify. We shortened and rephrased: "The experiments of Shimizu et al., (2013) are in accordance with the overall assumption that the coprecipitated humic acid are used by *Shewanella* to transfer electrons from the cell to the Fe oxide and advance its electron shuttling process. A threshold amount of mineral-associated humic acid was assumed to be necessary before electron shuttling accelerates ferrihydrite dissolution (Shimizu et al., 2013)."

L405: species-dependent

Was corrected accordingly

L407: by = through

Was corrected accordingly

L407-408: Write "Similar to Shimizu et al. (2013) our study shows..."

Was corrected accordingly

L452: is = was

Was corrected accordingly

L478: Start sentence with "In the present study mineral-bound...."

Sentence was changed accordingly.

L485: Add or/and after "matter,"?

We inserted "and/or"

L517: "which protect their mineral-bound organic matter" sounds a bit anthropomorphized for Fe oxides. Refrase.

We changed the sentence into: "Fe oxides are recognized as very important mineral phases, which stabilize their mineral-bound organic matter against microbial degradation in the long-term."

Table 1 caption: C/Fe ratios

Was corrected accordingly

Table 1/2 caption: refer to text for abbreviations

We added "See text for abbreviations."

Figure 1: ppm of what? Unit of y-axis? Please explain abbreviation CPMAS NMR

The NMR spectrum is displayed in the conventional way. The x-axis gives the chemical shift in ppm, calibrated with tetramethylsilane. This value can be converted in Hz, but ppm is much more useful: only when given vs ppm, spectra from different NMR machines can be directly compared to each other. The y-axis gives the intensity in arbitrary units. The y-values are normalized in the normal manner, so that the area under the curve equals 1.

We changed the labelling of the x-axis into "chemical shift (ppm)"

The new Figure caption reads: "Figure 1. ^{13}C Cross polarization magic angle spinning nuclear magnetic resonance spectrum (^{13}C CPMAS NMR) of the forest floor extract."

Figure 2/4: refer to text for abbreviations

"Refer to text for abbreviations" was added to the Figure captions of Figure 2 and 4.

Figure 5B: Please explain in figure caption the meaning of the dashed circles

We added: "Dashed and dotted lines in (B) encircle XPS data for adsorption complexes and coprecipitates, respectively, to guide the eye."

L814: is = was (2x)

Was corrected accordingly

L815:"...of the experiment in this sample (further details see text)...."

"(further details see text)" was added.

L822: "..., which is unreasonalbe (further details see text)."

"(further details see text)" was added.