

Reviewer's comments Prof. Dr. Gregor Borg, Martin Luther University Halle-Wittenberg, Germany

31.10.2022

A minor annotation for the entire manuscript: Use "s" (English spelling) instead of "z" (American English spelling). European Authors publish in a European Journal – unless the editors insist on American English spelling.

Line 40-41: The figures given by Kopp et al 2012 are predominantly based on historical data. The spacing of the bore holes (including the very few ones added by KSL) do not fulfil current international reporting requirements to delineate proven, indicated, or inferred reserves. Please add a sentence such as: "These are mainly historical resource figures and do not comply with current international reporting regulations, e.g. to the JORC or NI43-101 codes)." Your paper is very strong based on your own research and will be used and quoted abundantly, you would not want to raise an interest in The Spremberg Kupferschiefer for the wrong reasons 😊.

Line 80: replace "lithologies" by "lithotypes". Lithology (the logos of the lithos), is the overall science of the rocks, Lithotypes are various rock types or rock sequences, of which there can be many.

82: "Lower" instead of "lower" – stratigraphic term, change throughout the ms

99-100: I personally think that subduction-zone-related lithotypes in shear zones in the Mid-European Crystalline High have also contributed to the mineralisation. The spatial coincidence of the Kupferschiefer ore bodies with the arcuate-shaped MECH is simply too striking. You might add behind "infill" a small insert like "and possibly from sheared and faulted basement rocks".

110: You should mention and cite Symons et al. (2010) who have dated the hematitic redox-front at Sangerhausen with two palaeomagnetic ages (149 Ma and 51 Ma).

118: better "that is of Cretaceous age"

141: "well-mineralised" instead of "well mineralised" – check ms throughout there is inconsistent use of the hyphenisation

143: "comprises Cu ..." rather than "comprises of ...". N.b. "comprises x, y, z" but "consists of x, y, z"

214: "These ..." not clear what "These" refers to – please rephrase

216: "comprises of" see my comment above and check entire ms for same error

219: Replace "Owing to" by "Due to"

225: Replace "hasn't" by "has not", n.b. the former is not used in written English

385-390: Interesting observation. You might want to consider the decomposition and replacement of feldspar as a probable source of the kaolinite. The replacement has been documented from lithic clasts in the Grauliegend in Hessen, where the feldspar component has been replaced by chalcocite and chalcopyrite, probably producing kaolinite and silicification (from the excess Si) either proximally or distally (Borg et al. 2012 and other papers, e.g. in "grey" literature such as World of Mining). The hand specimen is part of my private collection, can be made available and could be used for hyperspectral scanning as a nice separate exercise 😊.

397: "discoloured" means void of colour, e.g. bleaching. "coloured red" or "reddened" would be the more appropriate term.

Comment on hematite redox colours in general. Scientists with a lot of experience in the colours of the Rotliegend (lighter red with a slight orange hue) and Rote Fäule (slightly darker and more violet) insist that they can distinguish the red colours between both. It would be very interesting to know how your spectral measurements distinguish these two (or more reddish colours). You state that you cannot distinguish, ok, but this might be worth to follow up on later.

421: "toward shallower level" ? do you mean "towards a shallower level) or "towards shallower levels"? please correct

429: as mentioned before, check for "s" and "z". Here you (correctly) use "s" in "mineralisation" - check throughout ms

464: you might want to insert after "(Kl)" " , possibly at the expense of feldspar that has locally been partly decomposed." But check for such features.

Best regards,

Gregor Borg