

October 23(rd), 2023

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Anonymous Referee #1

Solid Earth

Dear Editors and Anonymous Referee #1,

We wish to submit an article for publication in *Solid Earth*, titled “**Geochemical characterisation and protolith restoration of metamorphic rocks at Lazishao graphite mine, Sichuan(EGUSPHERE-2023-1528)**” The paper was coauthored by Haijun Yu, Wenqi Cheng , Xue Wang , Decai Kong , Bo Long .

We are grateful to you and referee for valuable comments that helped us to improve our paper considerably. Hereby we would like to resubmit a revised version of our manuscript where we carefully addressed all points raised by the referee.

We hope that after these changes and thorough revision, our manuscript will be deemed acceptable for publication in *Solid Earth*.

Thank you for your consideration. I look forward to hearing from you.

Sincerely,

Haijun Yu

Response to comments of Anonymous Referee #1:

Specific Comments

1. The study is related to one of the huge ore-bearing formation of the graphite deposits. Please provide more detailed discussion on the geochemistry of the graphite-bearing rocks in the formation, based on the results, implications and conclusions of other previous studies in the same area.

Reply: Thanks to your suggestions, we have added the following to the “Introduction”: In recent years, the Sichuan Bureau of Geology and Mineral Resources conducted mineral surveys on the study area and its surroundings to elucidate the stratigraphy, mineralization-controlling structures, and distribution of igneous rocks. Mineral resource estimations confirmed that the crystalline graphite deposit in the study area comprised a medium-sized deposit. Although previous work provided the geological data necessary for writing this paper, the microscopic structure and deposition characteristics of the graphite deposits have not been studied in great detail, and no systematic work has been done on the deposit’s geochemical properties, genesis, and provenance. These gaps in our understanding hinder research on the genesis of graphite deposits surrounding the study area and mineral-prospecting works (see lines 36-43).

The motivation of this study has been added in the revised version, see lines 44-48.

2. The formats of some reference need to be corrected.

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see lines 399-485).

Small annotation errors

Line 12, change “high” to “relatively higher”;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 12).

Line 25, change “desirable” to “remarkable”;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 22).

Line 94, change “directional” to “oriented”;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 117).

Line 97, change “interstitial between” to “interstitial to”;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 119).

Line 113, change “favourable” to “economically valuable”;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 133).

Line 122, change “Major elements compositions” to “Major element compositions”;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 147).

Line 154, change “ $\mu\text{g/g}$ ” to “ppm”;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see lines 178-180).

Line 159, “ δC ”, typo;

Reply: We are very sorry for our incorrect writing and it is rectified at Line (see line 182).

Line 217, change “apparent” to “evident”;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 258).

Fig.1, the legend of Fig.1b is too small;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 61).

Fig.5, the labels are too small;

Reply: We appreciate it very much for this good suggestion, and we have done it according to your idea (see line 175).

Fig.13, check the typos in labels.

Reply: We are very sorry for our incorrect writing and it is rectified at Line (see line 310).

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Editing Certificate

This document certifies that the paper listed below has been edited to ensure that the language is clear and free of errors. The edit was performed by professional editors at Editage, a brand of Cactus Communications. The intent of the author's message was not altered in any way during the editing process. The quality of the edit has been guaranteed, with the assumption that our suggested changes have been accepted and have not been further altered without the knowledge of our editors.

MANUSCRIPT TITLE

Geochemical characterisation and protolith restoration of metamorphic rocks at Lazishao graphite mine, Sichuan

AUTHORS

Wenqi Cheng 2, Haijun Yu1,2*, Xue Wang 3, Decai Kong 2, Bo Long 2

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Prabh Grewal
Senior Vice President - Editage

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