

Dear Dr. C.J. Lissenberg, Dear Dr. J. Gottsmann,

many thanks for Your editorial handling of the manuscript entitled "Anatomy of the magmatic plumbing system of Los Humeros Caldera (Mexico): implications for geothermal systems".

Please find attached the revised version of the manuscript named above.

This second revision of the manuscript has been edited following Your comments and advice.

Please, see our responses below (typed in red). Changes in the edited typescript are shown in red.

REVIEW by Executive Editor (Dr. J. Gottsmann)

The topical editor has come to the decision to recommend publication pending a couple of technical corrections. While I endorse these recommendations, I do not consider the paper publishable in its current form.

Looking at the ms in its entirety, I conclude that a final careful revision of the English must be conducted. There are numerous elements in the text where the writing can be much clearer, less ambiguous and grammatically correct. As an example, I please look at Conclusion #4. The current wording makes no sense, is impossible to understand and grammatically incorrect.

The uptake of the published paper by your peers will be improved by a well-written narrative. I therefore expect to see a revised version of the manuscript including the technical comments and revision of the English before I make my final decision on the ms.

We apologise for the quality of the English text. We carefully revised the text that was checked by the English mother tongue co-Author (J.C. White).

REVIEW by Topical Editor (Dr. C.J. Lissenberg)

The first relates to the analytical totals for the EPMA data, which was raised (for oxides) by Reviewer 2 and appears to be a general issue for all phases. The totals for anhydrous phases are generally below 100%, and regularly below 98%. There needs to be a way for the reader to verify data precision and accuracy, but the analytical techniques section on EPMA analyses does not mention methods or results of standard analysis, nor precision and accuracy. Given the importance of mineral chemistry for the thermobarometry, and the generally low totals, I think this should be discussed. I would recommend adding a table summarising the repeat analyses of the external mineral standards used to Appendix A.

We improved Appendix A.3 "Mineral chemistry". It is now specified the set of standards used for the EMP analyses. A table (Supplementary Table 7) with repeated measurement of two mineral standards (natural wollastonite and natural fayalite) is added. Data precision (1σ) and accuracy (1σ) are now reported. Existing literature used to compare and validate the mineral chemistry results obtained is now reported for each analysed phase.

We checked the EMPA dataset and we verified the existence of few analyses with low totals. We decided to delete them and correct the manuscript accordingly.

However, concerning the low totals, it is not true that the anhydrous phases are regularly below 98 wt%. Average totals are: (i) Pl-core: 98.35 wt%, (ii) Pl-rim: 98.26 wt%, (iii) Pl in ground mass (gm) : 98.46 wt%, (iv) Afs phenocrysts (ph) 98.74 wt%, (v) Afs-gm 98.71 wt%, (vi) Cpx1 98.48 wt%, (vii) Cpx2: 99.46 wt%, (viii) Cpx3: 99.28 wt%, (ix) Cpx4: 99.61 wt%, (x) Cpx5: 98.47 wt%, (xi) Ol-ph: 99.95%, (xii) Ol-gm: 99.22 wt%, (xiii) Opx-ph: 99.81 wt%, and (xiv) Opx-gm 99.93 wt%.

As a general rule, analyses with totals between 98 and 102 wt%, with ferric iron (Fe_2O_3) calculated, can be considered appropriate.

Since most of the thermobarometry models used in this work are based on the ferrous iron, we decided to present the original EMP analyses, without any further Fe^{2+} - Fe^{3+} correction.

Concerning the low total of some clinopyroxene (in particular those found in basalts, e.g. Cpx1 and Cpx5), we must remember that the LHPCS magmatic system is characterized by the important presence of Aeg compound ($\text{Na} + \text{Fe}^{3+}$).

Concerning low total of some feldspars, we would like to remember that: (i) all iron should be corrected as Fe_2O_3 , and (ii) we did not measure BaO and SrO since they were not useful for thermobarometry. However, feldspars in volcanic environments, could show up to 1-1.5 wt% of BaO+SrO.

Taking into account the above points, we believe that improving the totals could risk being merely cosmetics without any effective results/influence on the thermobarometry results.

Nevertheless, we agree with the Editor that the Appendix A.3 needed important technical improvements.

Second, in Table S1: please correct 'Fedspar'

Done.

Finally, regarding Table 1: Given that all of the mineral compositional data are in supplementary tables, I wonder whether the whole-rock geochemical data may be better off in a supplementary table as well. That way, any reader can easily download the Excel sheet for both liquids and crystals and so reproduce the thermobarometric calculations.

We would like to keep the Table 1 (Whole Rock geochemical data) in the text.

However, WR data are reported also in Supplementary Table 6 where they are used for FC-modeling.

We hope in the present form the manuscript may fulfill criteria for publication in Solid Earth.

Your Sincerely,

Federico Lucci
(on behalf of the co-authors)

