Review of: "The integrity of synthetic magnesium silicate in charged compounds"

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The reviewed paper investigated the effects of pH and charged compounds on the integrity of synthetic magnesium silicate. The problem of Mg^{2+} dissociation from magnesium silicate and its interaction with charged compounds specifically, was explored in the literature, and SEM/EDS/LC-HRMS techniques were utilized for studying this issue. Results and conclusions are critically discussed for studying the integrity of magnesium silicates. However, following few improvements can be made for further value addition to this paper.

1. Citing some more investigations on the harmful effects of the dissociation of synthetic magnesium silicate material in the literature review section would further develop the interest of readers and consequently, it would attain more attention.
2. Structure of the paper - The materials and methods section should be placed before results, discussion, and conclusion. This placement would enhance the understanding of the readers regarding investigatory process and details, which would make it more comprehendible to understand the results.
3. Why the particle size in SEM image A2 and B2, which represents neutral pH and interaction of magnesium silicate with CPC (positive) and Lauryl glucoside (neutral), is smaller than their acidic and basic counterparts, shown in figure 1? However, it shouldn't be the case as pH affects the leaching of Mg from magnesium silicate and therefore, the size of particles should be smaller for A3 and B3 as compared to A2 and B2, indicating the acidic environment damaging the magnesium silicate particles. Also, the ratio of percent Si over percent Mg, shown in figure 2, for the neutral environment is smaller, indicating an opposite picture. The authors are suggested to again check these SEM images.
4. The discussion section on page 4 starts by mentioning the influence of low pH (acidic) on higher concentration of magnesium dissociation from synthetic silicate. Yet, the SEM image A3 (in figure 1) doesn't complement with this claim and EDS spectra (shown in figure 2). EDS data supports the claims of authors while SEM doesn't, as larger particles are seen in SEM image A3, as compared to A1 and A2, while it shouldn't be the case. The authors are hereby proposed for re-checking the SEM image A3 specifically. Or it should be clearly elaborated in discussion that the interaction of magnesium silicate with positively charged CPC in acidic environment behaves differently owing to some reason. This can open up ways for understanding the integrity of synthetic magnesium silicates with positively charged compounds.
5. In the SEM images in figure 1, does the resolution scale of all images is same? When images A1, B1, and C1 are compared, the particle size in C1 is comparatively quite small showing damage to synthetic silicate due to interaction with negatively charged compounds. While figure 2 shows almost similar ratio of Si percent over Mg percent for all

three cases. Authors can comment on this discrepancy for value-addition to this work.

6. The quality and size of figure 4 should be improved for better understanding of the claims.
7. There should be more comments on figure 5, especially related to the takeaways from it.
8. The influence of two negatively-charged compounds, while a positively-charged and a neutral compound on integrity of magnesium silicate have been investigated in this study. It creates logic that negatively-charged compounds adversely affect the synthetic silicate due to the leaching of Mg^{2+}. A comparison of the effects of two investigated negatively-charged compounds would have made this article more interesting to analyze how one negatively charged compound is affecting this silicate more than the other and why.
9. Table 1 can be placed in “materials and methods” section for clearer understanding of the prepared samples, rather than in the “results” section. At its current place, it is providing a sense of redundancy, as similar information can be retrieved through figure 1.
10. On page 9, there are some temperatures mentioned with C. Rather ºC should be the correct choice.

Declaration of potential competing interests

The authors declare no competing interests.