Reviewer 3

Comments and Suggestions for Authors

Comment 1. The background is not convincing, is steel used frequently for heat exchangers? The introduction is not well written. The problem (science or technic) to be solved must be clearly analyzed.

Response: We have modified the introduction including the reviewer’s comments about background and research gap. The modified part can be found on pages #1-2; lines 38-50, 53-58, 65-80, and 88-97.

Comment 2. The manuscript lacks a lot of data to support their conclusion.

Response: We acknowledge your concern regarding the requirement for more detailed data to support our conclusions but we conducted this study to investigate the influence of standoff distances and feedstock flow rates on coating microstructures using our experimental setup. The primary focus was on understanding the importance of optimizing spray parameters to obtain well-adhered and protective coatings for geothermal heat exchangers. Our findings exhibited significant differences in coating microstructures and adhesion properties depending on these parameters. These preliminary outcomes act as a foundation for further optimization and development of advanced coatings for geothermal heat exchangers.

More comments are left in the attached pdf file, please check them.

Comment 3: The corrosion usually occurs at the inner of the exchangers, how could spraying method be used in this structure?

Response: Spraying, because it is a line-of-sight process is more suitable for coating the plates of the plate-type heat exchangers. For shell and tube type heat exchangers this would be difficult.

Comment 4. Focus on the conclusion in the abstract. And put more data supported results.

Response: The abstract has been modified and the modified part can be found on page #1, lines 20-25.

Comment 5. Figure 2 & 3, figure citation must be before the Figure itself.

Response: The suggested modification has been incorporated.

Comment 6. Does this coating really have any practical use?

Response: To test the practical use of the developed coatings, it is essential to conduct further testing in a realistic geothermal environment, where important factors such as thermal stability, long-term durability, resistance to corrosion, and thermal cycling need to be considered. Coatings developed in this preliminary study set a foundation for further optimization and development of advanced coatings for geothermal heat exchangers.