

Interactive comment on “Effects of Micro-Arrangement of Solid Particles on PCE Migration and Its Remediation in Porous Media” by Ming Wu et al.

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Response to Referee #2's Comments
Anonymous Referee #2 Received and published: 16 November 2017 This paper introduced the effects of micro-structure on the contaminant migration and remediation. The results and discussion are clearly demonstrated. This paper met the quality requirement. Language should be proofed by peers who were native speakers. Colloquial and informal words need to be revised. Some sentences were confused to understanding. Singular and plural problems and tense problems can be found in this paper. Please double check format requirements of the journal and whether

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case of every sentence is right [Response] We appreciate the Referee#2's positive comments and constructive suggestions. Accordingly, we have made great efforts to improve the manuscript and fully incorporated the referee's suggestions into our revised manuscript. Moreover, we have thoroughly checked the manuscript to correct English grammar errors and expression. Uncertainty could be involved in real-world scenario; how did you treat the uncertainty and error in the modeling? [Response] Comments accepted. As the referee stated, uncertainty is widely existed in reality and should be considered in real-world scenario. As a result, in this study, Sequential Gaussian Simulation (SGS) has been used for generating 200 random realizations of heterogeneous porosity field to deal with the uncertainty in the modeling. Is that possible that the assumption of porosity can be calibrated via BET analysis or other instrumental methods? [Response] Yes. This study focuses on the effect of micro-arrangement of sand particles on macroscopic DNAPL migration and associated remediation for underground storage tank spill. Heterogeneous porosity distribution is generated using Sequential Gaussian Simulation (SGS) method. Afterwards, permeability and entry pressure are derived based on regular triangle arrangement (RTA) and square pitch microscale arrangement (SPA), respectively. UTCHEM is then used to simulate the entire process of DNAPL migration and remediation in idealized heterogeneous contaminated site to reveal how the microstructure of porous media controls the contaminant migration and remediation at macroscopic scale. BET is a common technique used for determination of the surface area, porosity and other parameters of materials. For realistic porous media, the porosity can be measured using BET analysis. However, this issue is beyond this study and will be explored in our further work. Following papers should be cited to improve this paper: Shen, J., Huang, G., An, C., Zhao, S., & Rosendahl, S. (2017). Immobilization of tetrabromobisphenol A by pinecone-derived biochars at solid-liquid interface: Synchrotronassisted analysis and role of inorganic fertilizer ions. Chemical Engineering Journal, 321, 346-357. C. J. An, E. McBean, G. H. Huang, Y. Yao, P. Zhang, X. J. Chen and Y. P. Li. (2016). Multi-Soil-Layering Systems for Wastewater Treatment in Small

and Remote Communities. Journal of Environmental Informatics, 27(2), 131-144. A. K. Mishra, B. Kumar and J. Dutta. (2016). Prediction of Hydraulic Conductivity of Soil Bentonite Mixture Using Hybrid-ANN Approach. Journal of Environmental Informatics, 27(2), 98-105. Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-493>, 2017. [Response] Comments accepted and the references have been cited in the revised manuscript. We are grateful to the referee's whose constructive suggestions have led to significant improvement of the manuscript. In our resubmission, the marked DOC file (Wu_et_al_R2_marked.pdf) has clearly indicated all changes to the original manuscript; and all changes have been included in the clean version of the revised DOC file (Wu_et_al_R2_clean.doc). Also, in our marked PDF file, marked in a green strikethrough font is the text that should be removed from the original manuscript and marked in a red font is the text that has been added to the revision. In addition, Line number(s) mentioned below is referred to as that line numbering in the marked revised manuscript.

Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2017-493/hess-2017-493-AC2-supplement.zip>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-493>, 2017.

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