[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-GE Geological & Soil Environment

[A-GE31]Subsurface Mass Transport, Material Cycle, and Environmental Assessment

convener:Yuki Kojima(Department of Civil Engineering, Gifu University), Shoichiro Hamamoto(Department of Biological and Environmental Engineering, The University of Tokyo), Hirotaka Saito(東京農工大学大学院農学研究院, 共同), Yasushi Mori(Graduate School of Environmental and Life Science, Okayama University)
Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
This session covers the topics on mass transport, water and energy cycles in geoenvironment. Subjects related to laboratory and field measurements, theoretical analysis, and numerical modeling will be discussed. Presentations on geo-pollution, remediation, geological disposal of hazardous wastes, ground source heat utilization, mass transport in vadose zone, soil-water monitoring, and environmental assessment are encouraged.

[AGE31-P10]Effects of Bubble Concentration and Ionic Strength on Nano Bubbles Transport in Saturated Porous Media

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Keywords:Nano Bubble, Transport, Porous Media, Ionic Strength, Bubble concentration

An understanding of nano-scale bubble (NB) transport in porous media is important for potential application of NBs in soil/groundwater remediation. It is expected that the physical properties and solution chemistry of NB water highly influences the surface characteristics of NBs and porous media and the interaction between them, thus affecting the transport characteristics of NB. In this study, one-dimensional column transport experiments using glass beads were conducted, where air-NBs water were injected to the column. The turbidity, pH, EC, DO, and bubble size distribution in the effluent were measured. Effects of bubble concentration and ionic strength on the NBs transport were investigated based on the column experiments. The results showed that relative turbidities (measured turbidity in the effluents / turbidity in the applied NBs water) during the NBs water injection were lower for NBs water at lower bubble concentration. In addition, with increasing ionic strength in NBs water, lower relative turbidities in the effluents were observed, suggesting reduced repulsive force between NBs and glass beads surface. For NBs water at the same ionic strength, NBs water containing Na^{+} showed higher NBs mobility as compared to one containing Ca^{2+}. Thus, ion species also influenced NBs transport characteristics.