Verification of the Bubble Column Method

The bubble column method consists of comparing the linear K approximation to the exponential concentration profile. For low sorption affinity, it is expected that the linear K approximation is sufficient. However, for high sorption affinities, the exponential profile is much better. In extending this approach to colloid systems, we define K as the colloid partition coefficient. It is expected that in many natural systems the suspended colloid partition coefficients of clay and humic colloids at air-water interfaces are similar to those for surface-active species. The bubble columns method can also be used to identify surface exclusion of colloids at the air-water interface. The steady-state linear concentration profiles of kaolinite clay (a) and bacteria (b) on the surfaces of air-bubbles.

Examples of Partition Coefficients (K), Which Quantify Colloid Sorption at Air-Water Interfaces

The steady-state ratio of the concentration at the bottom of the column to the concentration at the free surface is given by

\[ \frac{C(z)}{C(b)} = K \exp(-Kz) \]

Conclusions

The K values we measured for humic acid and kaolinite indicate that the amount of air-water interface associated colloids is of the same order that is expected for a partially saturated vadose zone (Fig. 5). This result indicates that colloid partitioning at air-water interfaces of partially-saturated porous media can be much more significant than previously recognized. The K values we measured for kaolinite and humic colloids are of the same order that is expected for a partially saturated vadose zone (Fig. 5). This result indicates that colloid partitioning at air-water interfaces of partially-saturated porous media can be much more significant than previously recognized.

Colloids can facilitate transport of sorbed and dissolved species through vadose zones and ocean surface. Thus, quantifying colloidal surface excesses is useful for molecular species by transforming of colloids, and other organic and metal partition coefficients of colloids in partially-saturated vadose zones and ocean surface.  Thus, quantifying colloidal surface excesses is useful for molecular species by transforming of colloids, and other organic and metal partition coefficients of colloids in partially-saturated vadose zones and ocean surface. Thus, quantifying colloidal surface excesses is useful for molecular species. Air is bubbled through the vertical column containing dilute aqueous solutions of sodium dodecyl benzene sulfate (SDBS). The steady-state linear concentration profile was obtained with partition coefficients ranging from 10 to 300. The steady state concentration profile is used to obtain the sorption capacity of kaolinite clay (a) and bacteria (b) on the surfaces of air-bubbles. The steady state concentration profiles are used to obtain the sorption capacity of kaolinite clay (a) and bacteria (b) on the surfaces of air-bubbles. The steady state concentration profiles are used to obtain the sorption capacity of kaolinite clay (a) and bacteria (b) on the surfaces of air-bubbles. The steady state concentration profiles are used to obtain the sorption capacity of kaolinite clay (a) and bacteria (b) on the surfaces of air-bubbles.