

2010 Fall Meeting

Donado, L.D. and E.F. Espitia (2010), **Analysis of multi-specie reactive transport in heterogeneous media under kinetic reactions**, *Eos Trans. AGU*, 91(51), Fall Meet. Suppl., Abstract H51C-0917

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The transport of reactive solutes in a porous medium is modeled using a modified advection-dispersion equation (ADE) under all the assumptions that influence the application and affect the accuracy to reproduce reality. This condition sets up a higher or lower level of analysis complexity. This research consists on the analysis of reactive contaminants transport in heterogeneous media under chemical kinetic conditions. It means that the reactive time is slower than the characteristic transport time. An additional source/sink term is added to represent the reaction, which is characterized by chemical kinetic. The reaction is represented with an effective dynamic and is modeled by the multirate mass transfer model (MRTM). The problem is approached from a mass balance, defining the conservative components by decoupling the reaction by means of speciation. The solution of the transport equation for conservative components is achieved. The addition of heterogeneity is solved by integrating a multiple porosity model. This model considers an integrated set of dynamic and static regions to obtain a semi-analytical expression of the reaction rate.

DE: [1829] HYDROLOGY / Groundwater hydrology
DE: [1832] HYDROLOGY / Groundwater transport
DE: [1849] HYDROLOGY / Numerical approximations and analysis
DE: [1869] HYDROLOGY / Stochastic hydrology
SC: Hydrology (H)
MN: 2010 Fall Meeting

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