

Abstract Submitted
for the DFD09 Meeting of
The American Physical Society

Influence of miscible viscous fingering on an adsorbed solute dynamics MANORANJAN MISHRA, Universie Libre de Bruxelles, Brussels, Belgium, MICHEL MARTIN, PMMH-ESPCI, Paris, France, ANNE DE WIT, Universie Libre de Bruxelles, Brussels, Belgium — Viscous fingering between miscible fluids of different viscosities can affect the dispersion of finite width samples in porous media. We investigate here the influence of such VF due to a difference between the viscosity of the displacing fluid and that of the sample solvent on the spatio-temporal dynamics of the concentration of a passive solute initially dissolved in the injected sample and undergoing adsorption on the porous matrix. Such a three component system is modeled using Darcy's law for the fluid velocity coupled to mass-balance equations for the sample solvent and solute concentrations. Depending on the conditions of adsorption, the spatial distribution of the solute concentration can either be deformed by viscous fingering of the sample solvent concentration profiles or disentangle from the fingering zone. In the case of deformation by fingering, a parametric study is performed to analyze the influence of parameters such as the log-mobility ratio, the ratio of dispersion coefficients, the sample length and the adsorption retention parameter k' on the widening of the solute concentration peak.

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Date submitted: 30 Jul 2009

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