



Colloids at NAPL-Interfaces

Thomas Baumann and Christian Metz

Technische Universität München, Institute of Hydrochemistry, München, Germany (tbaumann@tum.de)

Non-aqueous phase liquids in subsurface are relevant in the scope of contaminated sites as well as for enhanced oil recovery. In both cases colloids and engineered nanoparticles are applied to increase the efficiency of NAPL removal. Particle tracking experiments using fluorescent latex beads and opaque particles have been run in micromodels mimicking the pore structure of subsurface media. The results show that the interface between NAPL and water is highly dynamic, especially in its early stage. There is a distinct circular flow pattern at the interface, effectively increasing the interfacial area. Concentration gradients measured with Raman Microspectrometry at low Peclet numbers suggest that the mass transfer of dissolved contaminants from the NAPL into the water is highly affected by the interface dynamics. On the other hand the interfaces themselves are less accessible, which has implications for the remediation of contaminated sites.