**Minisymposium 9 - Nichtlineare Evolutionsgleichungen und Probleme mit freiem Rand**

## Homogenization of degenerate two-phase flow equations with a free boundary approach

BEN SCHWEIZER (UNIVERSITY OF BASEL)

We consider the one-dimensional degenerate two-phase flow equations as a model for water-drive in oil recovery. The effect of oil trapping is observed in strongly heterogeneous materials with large variations in the permeabilities and in the capillary pressure curves. In such materials, a vanishing oil saturation may appear at interior interfaces and inhibit the oil recovery. We introduce a free boundary problem that separates a critical region with vanishing permeabilities from a strictly parabolic region and give a rigorous derivation of the effective conservation law.