

Modeling and Simulation of Moving Contact Line Problems for Two-Phase Complex Fluids

Zhen Zhang

Department of Mathematics, Southern University of Science and Technology, China

Email: zhangz@sustc.edu.cn

We introduce the sharp interface models for moving contact lines with insoluble surfactants and polymeric fluids. A continuous model with the boundary conditions is derived for the dynamics of two immiscible fluids with moving contact lines and insoluble surfactants based on thermodynamic principles. A finite element numerical method is developed to solve the coupled partial differential equation. We also discuss the model reduction of the slip model to the no-slip limit by the technique of asymptotic analysis.