Description of the master's thesis

The M.Sc. thesis is concerned with modelling and implementation of Microbially Enhanced Oil Recovery (MEOR) with a particular focus on pore clogging. For developing a mathematical model for clogging of pores due to microbes in a two-phase flow porous media system, we started with the equations from [Kim 2006] and implemented these equations into the numerical simulator Dumux, thereby considering the interactions of processes during MEOR as described by [Li et al 2011]. We put a special focus on the formation of biofilms. This includes two fluid phases, water and oil, and six components in the water phase, which are water, suspended bacteria, nutrient substances, reaction products, reversibly and irreversibly attached biofilm. The thesis is not yet finished at the time of writing this report. Further steps will be to test the implementation, choose the proper bacteria and nutrient properties to arrive at a plausible model which might serve for validation experiments in the future.

References
