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Viscous fingering involving disappearance of precipitation by a chemical reaction in a Hele-Shaw cell YUKI ISHII, YUTAKA TADA, Nagoya Institute of Technology, YUICHIRO NAGATSU, Tokyo University of Agriculture and Technology — Previously, we experimentally studied viscous fingering involving production of a precipitation by a chemical reaction in a Hele-Shaw cell (Nagatsu et al. PRE 77, 067302 (2008)). In the present study, we have conducted experiments on viscous fingering involving disappearance of a precipitation by a chemical reaction in a Hele-Shaw cell. In the present experiments, the more-viscous liquid contains the precipitation. In the reactive case, we used a solution including a reactant which reacts with the precipitation resulting in disappearance of the precipitation. In the non-reactive case, water was used as the less-viscous liquid. Thus, viscous fingering was observed in both the reactive and non-reactive cases. We have found that viscous fingering pattern is changed by disappearance of the precipitation by the reaction. Furthermore, effects of the reactant concentration and the injection rate of the less-viscous liquid on the change in the pattern by the disappearance of the precipitation were examined.

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