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Numerical simulation of miscible viscous fingering with viscosity change in a displacing fluid by chemical reaction KEIICHIRO OMORI, YUICHIRO NAGATSU, Tokyo University of Agriculture and Technology — Viscous fingering (VF) with viscosity changes by chemical reactions in case of miscible systems have been investigated both experimentally and theoretically in the recent years. Nagatsu *et al.* investigated experimentally miscible VF in which viscosity of the displaced fluid ^[1] or the displacing one ^[2] is changed by fast chemical reaction. They showed that VF was more dense by the viscosity increase whereas less dense by the viscosity increase regardless of whether the viscosity change occurs in the displaced fluid or displacing one. From a theoretical viewpoint, numerical simulation performed on the reactive VF where viscosity of the displaced fluid is changed by instantaneously fast chemical reaction ^[3]. The results had a good agreement with those in the corresponding experiment ^[1]. In this work, we have conducted numerical simulation on such reactive VF where viscosity of the displacing fluid is changed. We have found the results have a good agreement with the corresponding experimental ones ^[2] [1] Y. Nagatsu *et al.*, J. Fluid Mech., 571 475–493 (2007). [2] Y. Nagatsu *et al.*, Phys. Fluids, 22 024101 (2010). [3] Y. Nagatsu and A. De Wit, Phys Fluids, 23 043103 (2011).

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