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An experimental study on non-isothermal miscible displacements in Hele-Shaw cells NORIHITO FUJITA, YUICHIRO NAGATSU, YOSHIHITO KATO, YUTAKA TADA, Department of Material Engineering, Graduate School of Engineering, Nagoya Institute of Technology — Non-isothermal miscible displacements in Hele-Shaw cells are experimentally investigated. This is done by the more-viscous liquids at room temperature being displaced by the less-viscous liquids at high temperature, 353K. Fundamental characteristics are presented on how the effects of non-isothermal field on the miscible displacement patterns are varied by the following factors, the viscosity of the less-viscous liquid at ,293K, $\mu_{l,20}$, the growth rate of the pattern, R, the growth time of the pattern, t, and the gap width of the cell,b. The effects of non-isothermal fields on the pattern (1) do not monotonically varied with $\mu_{l,20}$, and become significant in a certain limited range of $\mu_{l,20}$. (2) increase with R in the present experimental condition. (3) decrease with t in the present experimental condition. (4) do not monotonically varied with b. The experimental results is able to be explained by the cooling model of the less-viscous liquids due to heat loss to the plates consisting of the cell.

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