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**An experimental study of miscible viscous fingering of annular ring** YUICHIRO NAGATSU, HAMIRUL BIN OTHMAN, Tokyo University of Agriculture and Technology, MANORANJAN MISHRA, Indian Institute of Technology Ropar — Understanding the viscous fingering (VF) dynamics of finite width sample is important in the fields especially such as liquid chromatography and groundwater contamination and mixing in microfluidics. In this paper, we experimentally investigate such hydrodynamical morphology of VF using a Hele-Shaw flow system in which a miscible annular ring of fluid is displaced radially. Experiments are performed to investigate the effects of the sample volume, the effects of dispersion and log mobility ratio  $R$  on the dynamics of VF pattern and onset of such instability. Depending whether the finite width ring is more or less viscous than the carrier fluid, the log mobility ratio  $R$  becomes positive or negative respectively. The experiments are successfully conducted to obtain the VF patterns for  $R > 0$  and  $R < 0$ , of the finite annular ring at the inner and outer radial interfaces, respectively. It is found that in the radial displacement, the inward finger moves slower than the outward finger. The experimental results are found to be qualitatively in good agreement with the corresponding linear stability analysis and non-linear simulations results available in the literature.

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