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Control of Radial Miscible Viscous Fingering Using a Finite Blob-An Experimental Study. SADA NAND, VANDITA SHARMA, MANORANJAN MISHRA, Indian Institute of Technology Ropar — We experimentally demonstrate the control of miscible viscous fingering instability in a novel way. We consider the less viscous fluid initially in a circular blob of finite radius r_0 displacing the surrounding more viscous fluid in the radial Hele-Shaw cell. Experiments only with a point source (r_0 =0) are available in the literature. Getting initial finite circular blob is a huge experimental challenge. For each r_0, a flow rate is wisely calculated so as to have a stable displacement up to radius r_0. Also, a diligently designed T-junction is utilized in the Hele-Shaw experimental set-up to ease the fluid injection. The experiments depict the initial radius of the circular blob (r_0) as a controlling parameter. A delay in instability is observed for experiments with non-zero r_0 in comparison to those performed with a point source. Further, a reduced instability is evident with an increase in r_0, which is in agreement with the numerical simulations performed.

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