

The time evolution of convection pattern in layered system

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Layered convection system in miscible fluids collapses to a single uniform convection in the Rayleigh-Benard situation, even when the applied temperature difference is much smaller than that required to overcome the density difference. This is caused by extensive material transfer through the interface assisted by convection flows. We report the time evolution of layered convection systems toward the collapse of structure. The initial state was two- or three- layered structure, which was given by different concentration of glycerol. The configuration of the upper and lower convection pattern changed systematically with time, and the mixing rate also increased. The time to collapse the layered system for a given density contrast depended on Rayleigh number for each layer.