

Miso soup clock

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Thermal convection coupled with phase separation of constituent materials is widely observed, general phenomena in earth and planetary sciences. It is expected to control both thermal and structural evolution. Examples of this phase separation are crystallization from melt, vesiculation of gas phase from melt, decomposition of solid phase and liquid immiscibility. Associated with these phase separations the resultant phase has a density different from the host. The density contrast is usually comparable or well larger than that of the thermal convection. This causes peculiar fluid dynamic motion and phase separation is strongly coupled with thermal convection. Because of the complicated nature of the interaction we have not yet attained unified view of this process. A simple, conceptual experimental system is necessary to work on this subject. Here we present such an example of miso soup convection.

At high temperature state miso soup is vigorously convecting whereas at cooled state miso component settles down forming a distinct miso-condensed layer at the bottom. Depending on the applied heat this system has two extreme states; miso convective state(single layered convection state) and miso static state (2layered system). At intermediate regime regular oscillatory transition between these states is observed. We have conducted a series of simple Kitchen Experiment on this system and report the period of this transition changes with the amount of miso and applied power.

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