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**Pattern Formation in Marangoni Convection in an Annular Cell**

TAKASHI MASHIKO, SATOSHI MATSUMOTO, HIROAKI OHIRA, SHINICHI YODA, Japan Aerospace Exploration Agency, YASUHIRO KAMOTANI, Case Western Reserve University — To elucidate the mechanism of air bubble alignment in Marangoni convection in an annular cell, which was accidentally observed in a microgravity experiment on a space shuttle, we started a series of experiments on the ground. We have three candidates for the main cause of the alignment in mind; surface flow of air bubbles, excluded-volume effect of air bubbles, and formation of some periodic flow structure. Based on this prospect, we designed and have conducted three kinds of experiments; input of liquid droplets into convection, input of solid beads, and observation of the flow pattern using tracer particles. The initial experiments have given us some information, such as a sign of transition of the flow structure, which motivates further investigation. In addition to the flow observation in the above-mentioned initial experiments, we recently set up a new experimental system, in which the temperature distribution on the free surface is measured simultaneously with the flow observation.

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