

# CALL FOR PAPERS

*Microgravity* could give us unobtainable opportunity comparing to that on ground. There are no buoyancy and sedimentation, no hydrostatic pressure, containerless processing, and no thermal condition, which are unobtainable on ground. Those phenomena are so effective under state of liquid and gas phase. By using those phenomena, we could understand real process and/or phenomena which are hidden by thermal convection and so on on ground. Crystal growth from melt always has thermal convection effect, since it always needs thermal gradient to obtain a single crystal. Boiling behavior is also strongly affected by gravity. But under microgravity we can observe the nucleation of bubble at the heating plate and bubble growth behavior completely without buoyancy. Microgravity condition can make clear a lot of understanding of basic physical phenomena in material science especially crystal growth from solution as well as melt, fluid physics, and combustion science.

We would like to invite authors to submit original research and review articles that make clear basic physical issues in each discipline. The experiments include short duration microgravity opportunity such as drop tower and sounding rocket. We are also interested in articles that explore high performance technology development to obtain highly precise experimental data and also future human flight technology.

Potential topics include but are not limited to the following:

- ▶ Development of high quality crystal growth technology with thermal gradient condition by elucidating its mechanism
- ▶ Development of metastable phase production and understanding its mechanism
- ▶ Establishment of fire safety regulation for future human space flight
- ▶ Surface tension flow is very unique under microgravity, but mechanism of transition from laminar to oscillatory flow with half-zone liquid bridge is still unexplained
- ▶ Effect of environment on surface driven flow and transition behavior are also issues
- ▶ Two-phase flow is so important technology for future human flight. The mechanism of bubble formation under slow water flow is big issue. And also heat transfer phenomena with flow is issue
- ▶ Combustion on ground continues by supplying flammability gas and oxygen by convection. Under microgravity flammability gas and oxygen diffusion is dominant, so that exact modeling should be established
- ▶ G-jitter effects on diffusion, fluid flow, crystal growth are still unclear. Those effects are expected to obtain highly precise data and elucidate mechanisms

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