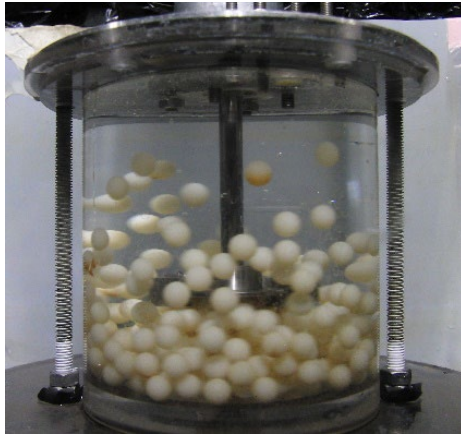


# Heat Transfer Enhancement and Control of Fluid Flow

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Research for heat transfer enhancement

Behavior of large particle in solid-liquid agitation vessel



Heat transfer enhancement is achieved by using the fluctuation of bulk flow due to the addition of large particle.



Visualization of floating particles in a solid-liquid spouted bed device



On the left is the case where there is no flow guide in the device, and the spouted bed is unevenly distributed.

On the right, a stable spouted bed is formed due to the effect of the flow guide.

Content :

- ① Use of secondary flow due to buoyancy
- ② Utilization of changes in physical properties of supercritical fluids
- ③ Using the secondary flow in the spiral flow path

Agitation

- ① Gas hold-up and mass transfer in gas-liquid stirring tank
- ② Effect of adding coarse particles on heat transfer in solid-liquid agitation vessel

Solid-liquid two-phase flow

- ① Reduction of pressure loss of solid-liquid two-phase flow by adding surfactant
- ② Particle floating and heat transfer characteristics in solid-liquid spouted bed

Appealing point :

Heat transfer and fluid dynamics are basic research topics, however these are the important unit operations useful in all industrial fields.

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Research Interest : Heat transfer and Fluid dynamics

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