Development of Microbubble Generation Technology and its Application

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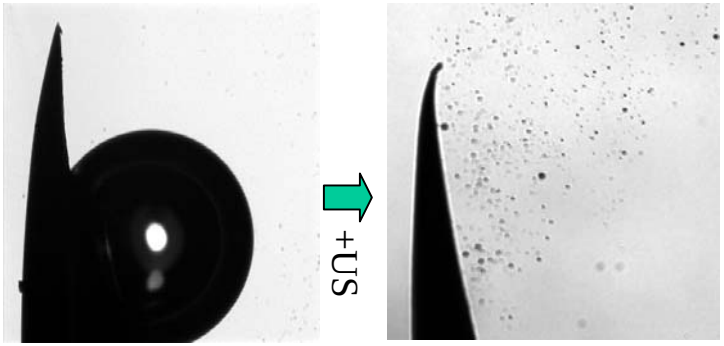
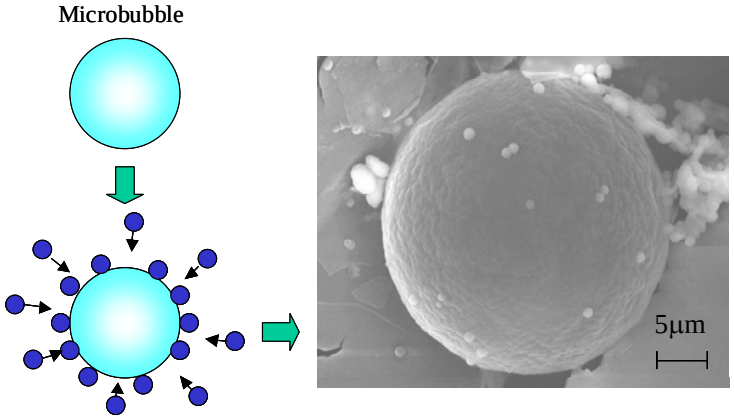


A single bubble over 1mm… breaks up into microbubbles

Microbubble Generation from a Needle in an Ultrasonic Field



Hollow Microcapsule from Microbubble Template

Content:

[Microbubble Generation Technology]

Bubbles with diameters less than 100μm (Microbubbles) are gaining significant attention owing to their properties; large surface area per unit volume, low buoyancy, self-pressurization and acoustical property. Our laboratory is developing novel microbubble generators using ultrasound and investigating various generation mechanisms. In addition, we are developing applications of microbubbles for disinfection, cleaning, and fabrication process of novel materials.

[Hollow Microcapsule from Microbubble Template]

We develop a fabrication method for hollow microcapsules from microbubble templates. The method is based on direct encapsulation of microbubbles, and thus does not require a liquid- or solid-core decomposition process. The capsule diameter depends on the gas dissolution rate, and the diameter of the hollow microcapsules fabricated from air microbubble templates ranges from 5 to 200 μm. These microbubbles can be used as thermal and acoustic insulators as well as microbubble contrast agents.

Research Field : Mechanical Systems Engineering
Specialty : Fluid Engineering

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