

Nano Bubble and Emulsion Size Distribution Measurement by Interactive Force Apparatus

Toyohisa FUJITA*, Takeshi KUROSE*, Josiane PONOU*, Gjergj DODBIBA*,
Atsushi SHIBAYAMA** and Akira OTSUKI***

*Department of Systems Innovation, Graduate School of Engineering,
The University of Tokyo, Tokyo 113-8656, Japan

**Graduate School of International Resource Sciences,
Akita University, Akita 010-85026, Japan

***Ecole Nationale Supérieure de Géologie, Université de Lorraine, 2 rue du Doyen Marcel Roubault,
TSA 70605, 54518 Vandœuvre-les-Nancy Cedex, France

E-mail: tfujita@sys.t.u-tokyo.ac.jp

Nano bubbles are prepared by using a pressurized pump or fine ceramics in water or oil. The prepared nano bubbles are stable for more than several days. Nano emulsion (w/o type) is prepared by mixing oil, water and surfactant with homogenizer and stable more than several months. The prepared bubble and emulsion size distribution in liquid is usually measured by dynamic light scattering method. However, it is difficult to measure the particle size for smaller refractive indexes between dispersed particle and solvent by the light scattering method and small amount of particle volume. Here, the dynamical method of interactive force measurement between dispersed nano bubble and emulsion under electric field has been used to measure any kind of small particle size distribution.

Keywords : Nano bubble, Nano emulsion, Size distribution, Interactive force apparatus, Dynamic light scattering method