### **Ocean Nanosensing**

### **F-block Elevator Hall**

# NISHIDA LAB. [Ocean Nanosensing]

### **Underwater Technology Collaborative Research Center**

http://www.microfluidics.iis.u-tokyo.ac.jp/

Ocean Nanosensing

Department of Systems Innovation

## Underwater Nanoworld

### Underwater Atomic Force Microscope

### Research Purpose

In ocean, there exist various small pelagic resources, which are important environmental elements of the earth. Our research purpose is to observe the precise morphology of micrometer sized samples suspended in deep sea with high-spatial-resolution down to nanometer scale, for revealing new findings of the nature of ocean.

### Research Subjects

We are developing an Underwater Atomic Force Microscope (UAFM) system, which is mountable on underwater vehicles. The system is composed of three key technological components, that are essential for operating AFM in deep-sea as follows:

- Ortable UAFM: Downsizing, Weight saving, Water pressure resistance
- Sampling mechanisms using microfluidic devices: Sample collection, Filtration, Sorting, Sample fixation Environmental control
- Mount mechanisms for underwater vehicles: Vibration isolation, Remote and Automatic control







#### Institute of Industrial Science