



YANAGIDA Lab.

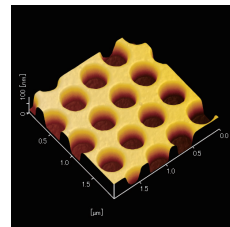
From biomedical technology to extreme environment measurement with bio MEMS technology

Industrial Mechano-System Research Core (FIRST)

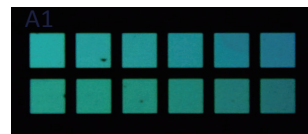
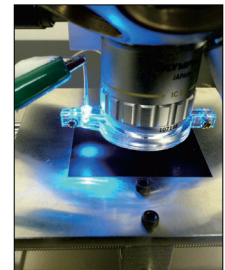
<http://www.yanagida.first.iir.titech.ac.jp/>

- Application to bio-measurement of nano periodic structure
- Cell functional engineering by bio MEMS / NEMS
- Nanobiotechnology by biomolecular characteristics
- Ocean environment measurement system using microchannel

We design and manufacture nano periodic structures and evaluate their optical characteristics for the purpose of downsizing and high sensitivity of biosensors for detecting biomolecules. In the field of medical diagnosis and biochemistry research, combinatorial cell activity / function analysis has come to be conducted by separating, arranging, fixing and culturing specific cells. We propose cell functional engineering and environmental measurement system with high safety and accuracy using bio-MEMS technology.



Photonic crystal structure



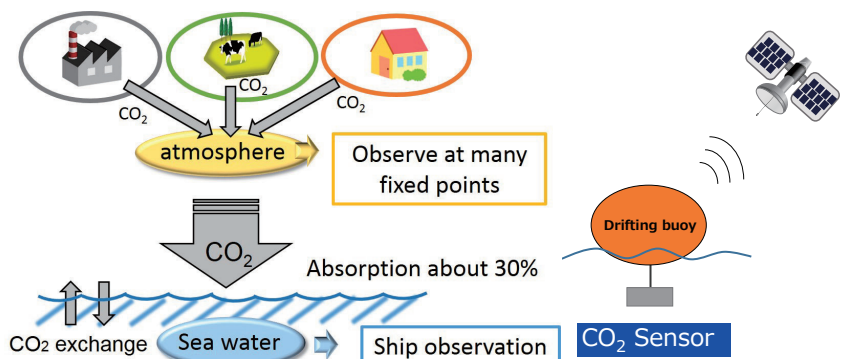
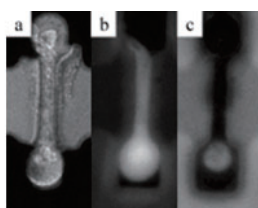
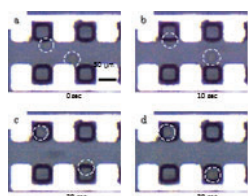
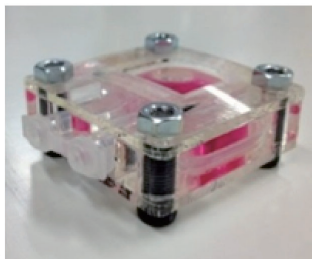
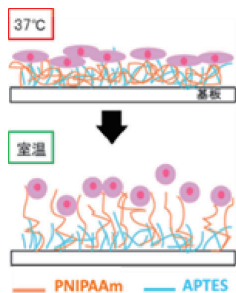
Observation image of fluorescent sample solution



Appearance of measurement chip

Measurement of minute amount of biofluorescent light by nano periodic structure

- Optical characterization of nano periodic structure
- Nanoperiodic structure design and fabrication with multiple types of optical wavelength characteristics



Cell functional engineering by bio MEMS technology

- Individual cell arrangement and neural cell differentiation induction
- Closed cell culture system with peeling function
- Utilization of cell culture substrate using porous silicon substrate

Micro-channel ocean environment measurement system

Micro device for measuring marine environment by utilizing advanced technology of bio-MEMS device fabrication