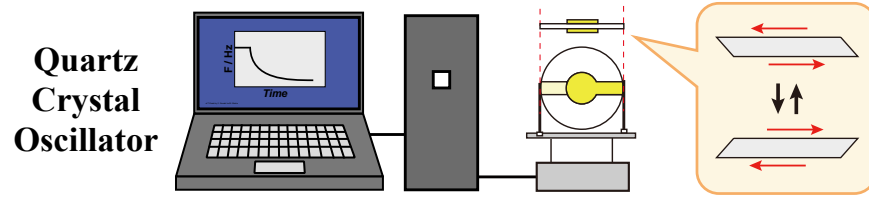


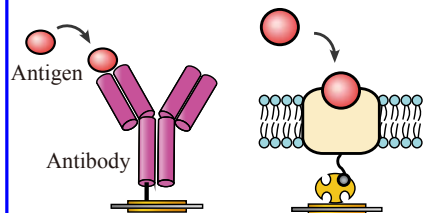
# In situ Observation of Polymer and Biomolecular Behaviors

Professor Hiroyuki Furusawa

## Microbalance at a Nano-gram Level



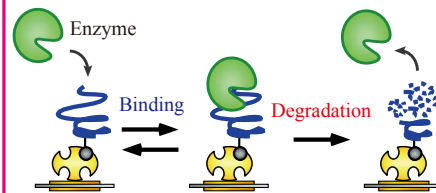
### Molecular Interaction



Development  
of Biosensor

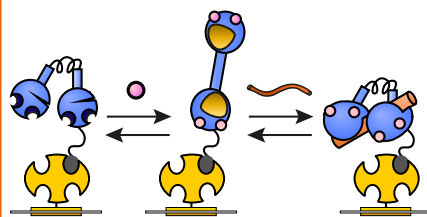
Evaluation  
of Medicine

### Enzymatic Reaction



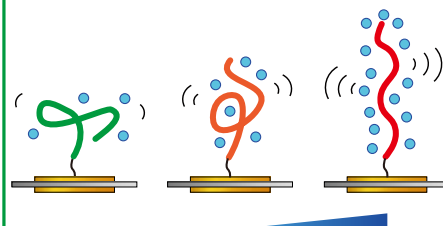
Evaluation of Reaction Rate

### Structural Change in Protein



Mechanism of Bio-systems

### Dynamic Viscoelasticity



Evaluation of Polymer Material

## Content:

A quartz crystal oscillator with high frequency stability is a device that provides mechanical information such as mass and viscoelasticity about materials on the oscillator. This device can be used in a microbalance owing to its ability to measure mass changes at a nano-gram level.

We developed a quartz crystal oscillator-based biosensor and demonstrated its application to *in situ* observation of biomolecular interactions and enzymatic reactions. In addition, we observed structural changes in proteins and evaluated dynamic viscoelasticity of polymers by measurement of the oscillation energy dissipation.

## Appealing point:

This technique is expected to be applied to the evaluation of biomolecular activities and properties of polymers at a molecular level. We address the development of the novel device that anyone can use anywhere.

Yamagata University General Graduate Education

Research Interest : Biomolecular Engineering,  
Biosensor,  
Analytical Chemistry

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