

# Final Report of Bio Team

## (Experiment and Simulation on The Albumin Adsorption)

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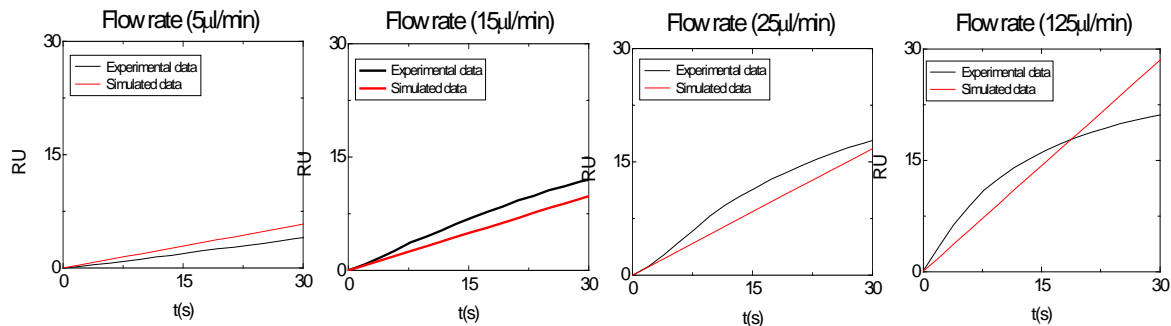
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### 1. The Purpose on This Seminar

Through this seminar, we are the experiment and simulation on the albumin adsorption on the gold surface by using SPREETA<sup>TM</sup> that is an optical biosensor based on the surface plasmon resonance (SPR) principle. We study mass transport effect on the albumin adsorption on the gold surface.

### 2. The Result of The Experiment

Experimentalized with flow rate conditions  $5\mu\text{l}/\text{min}$ ,  $15\mu\text{l}/\text{min}$ ,  $25\mu\text{l}/\text{min}$ ,  $125\mu\text{l}/\text{min}$ , initial value in conditions fitted well with theory value under condition  $25\mu\text{l}/\text{min}$ .



### 3. Discussion

Using the SPREETA<sup>TM</sup> that is a SPR based sensor, we studied the effect of mass transport on the adsorption of albumin to the gold surface. The mass transport effect dominates the adsorption rate when the binding of albumin onto the gold surface becomes more dominant than the diffusion of albumin near the surface. Under limiting conditions of the mass transport,  $25\mu\text{l}/\text{min}$ , initial adsorption rate was found to be proportional to  $Cv^{1/3}$  ( $C$ : bulk albumin concentration,  $v$ : flow rate), which is in good accordance with theoretical expectations. In the future, we are going to watch the mass transport's effect as changing concentration of the albumin solution.