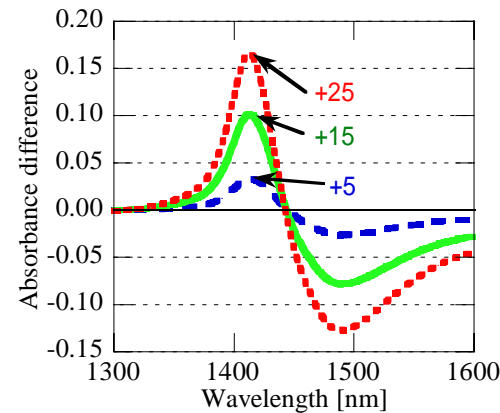
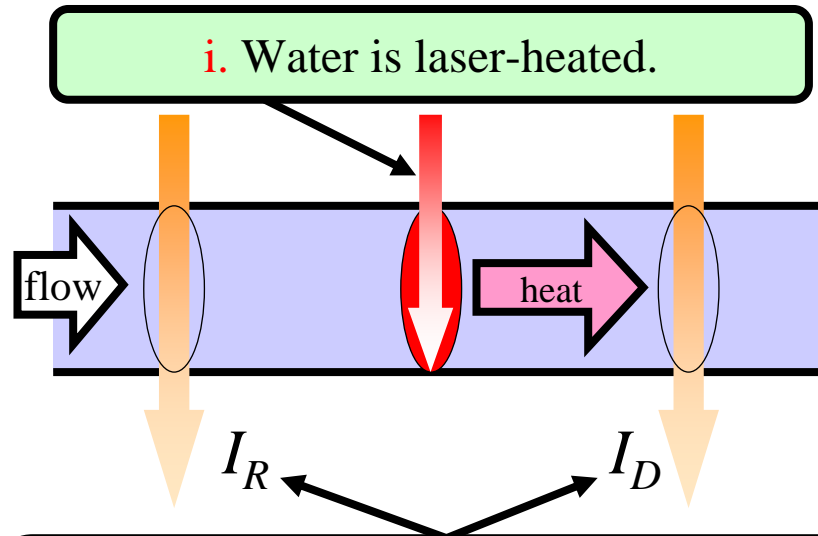
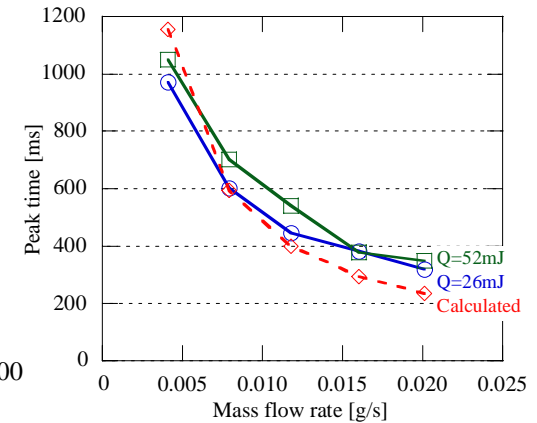


Flow meter using light absorption by water

In the manufacturing process of semiconductors with the advanced miniaturized circuits, highly precise flow control of processing liquids is required for a very low flow rate below 1 ml/min. In order to maintain the purity of the liquids, flow rate must be measured without contacting the liquids. We are studying a new non-contact type of flow meter using near infrared spectroscopy.



Temperature variation of absorption spectrum of water.



Experimental results.

ii. Absorbance difference is obtained from the intensity ratio of the transmitted lights measured at upstream and downstream of the heating position.

iii. Time from the heating to the peak of absorbance change is measured and correlated with the flow rate.

Absorbance difference $\Delta A = -\log_{10}(I_D/I_R)$ changes with the temperature difference between the measuring points.