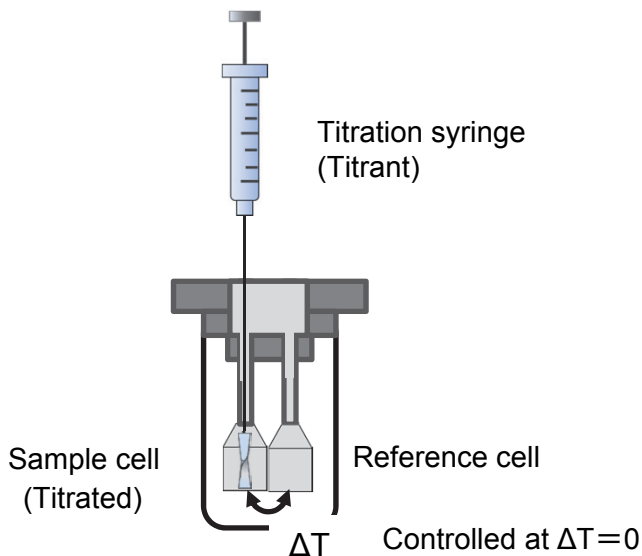


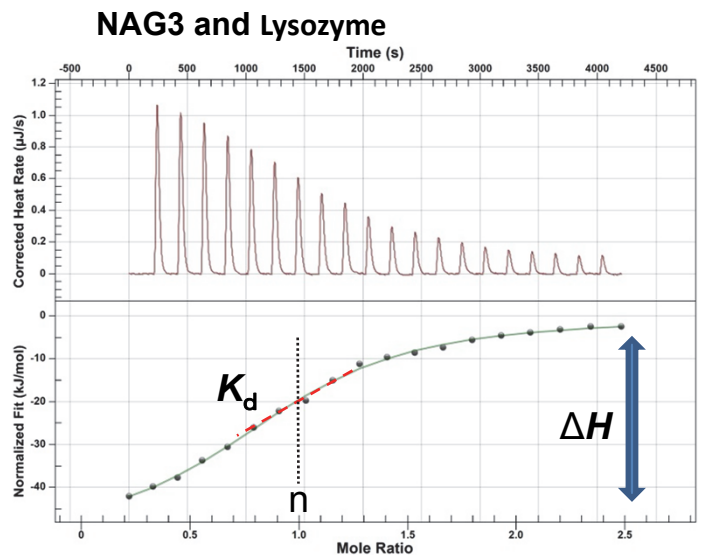
# ITC measurement of biomolecular interactions

Isothermal Titration Calorimetry (ITC) measures heat transfer during biomolecular binding, determining binding constants ( $K_d$ ), reaction stoichiometry ( $n$ ), enthalpy ( $\Delta H$ ), and entropy ( $\Delta S$ ). The thermodynamic profile enables determination of binding form between biomolecules (specific or non-specific binding).

## ITC measurement



## Titration profile



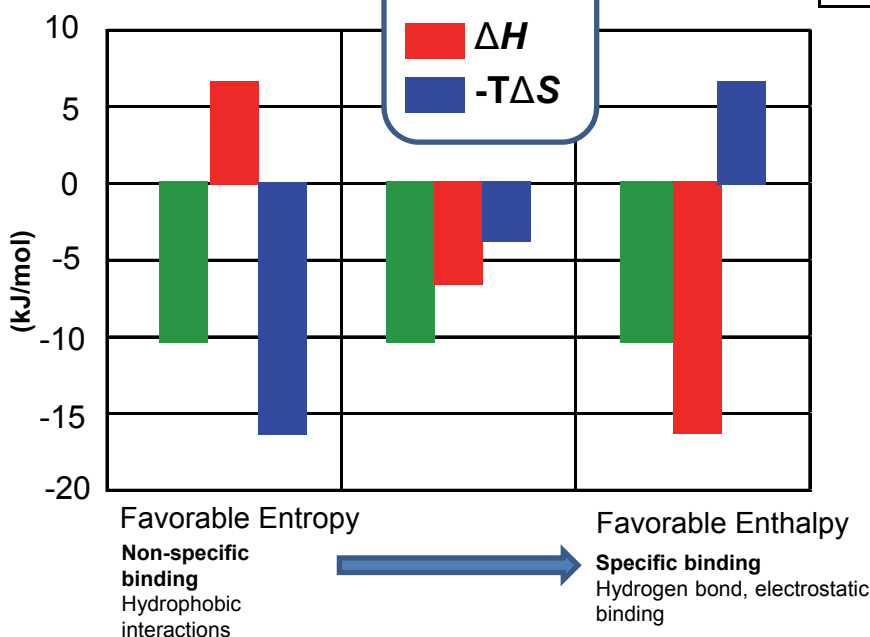
**Analyte:** water-soluble substances, nanoparticles

**Application:** Biomolecular interactions  
(Quality control of proteins, nucleic acids, peptides, small molecular drugs, enzyme kinetics, etc.)

## Thermodynamic parameter

$K_d$ (mol/L)	$6.5 \times 10^{-6}$
$n$	0.93
$\Delta G$ (kJ/mol)	-29.6
$\Delta H$ (kJ/mol)	-51.7
$-T\Delta S$ (kJ/mol)	22.1

## Thermodynamic profile



## Characteristics

1. Determine binding form by thermodynamic analysis
2. No modification such as immobilization and labeling
3. No limit on molecular weight
4. nM to  $\mu\text{M}$ -order interactions can be measured with small aliquots of samples

## Minimum required sample size (in case of $K_d=1 \mu\text{M}$ )

1. Sample in syringe (Titrant)  
ca. 100  $\mu\text{M}$ , 250  $\mu\text{L}$
2. Sample in cell (Titrated)  
ca. 10  $\mu\text{M}$ , 300  $\mu\text{L}$