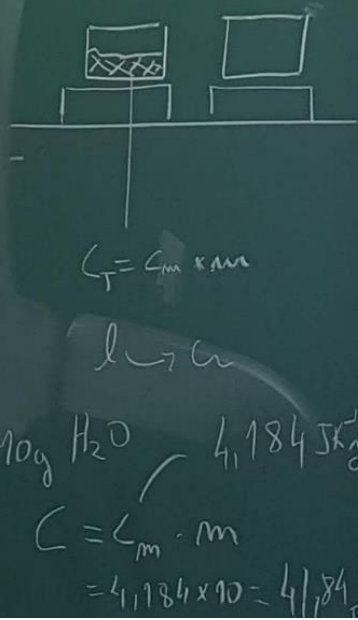
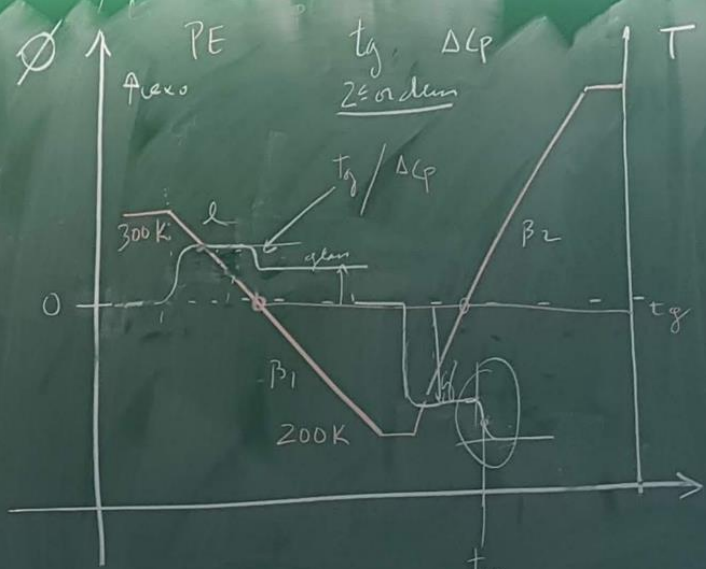
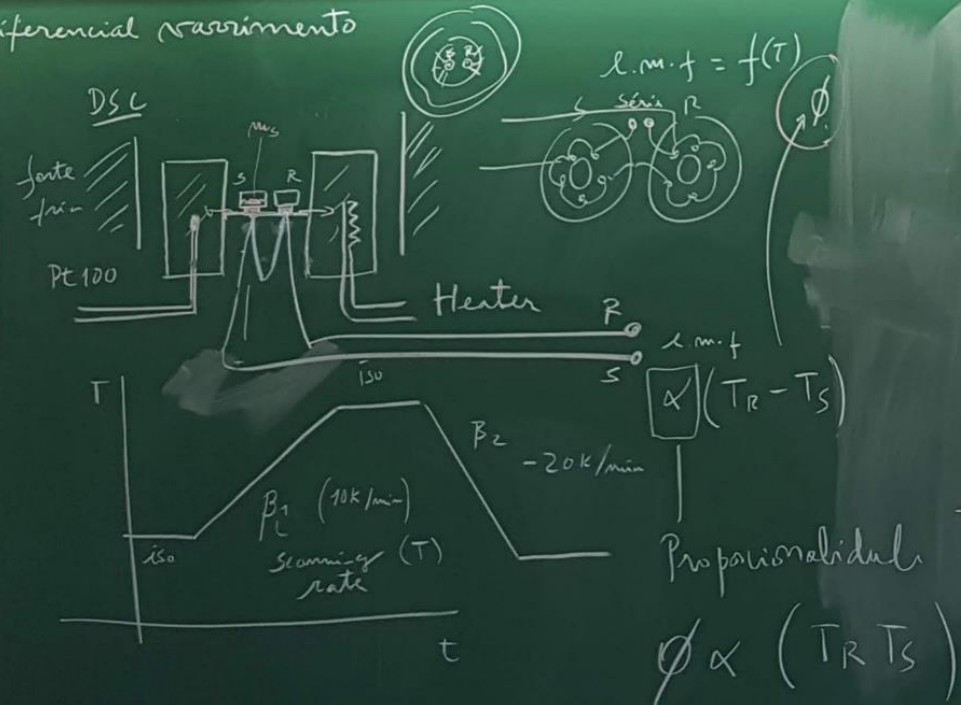
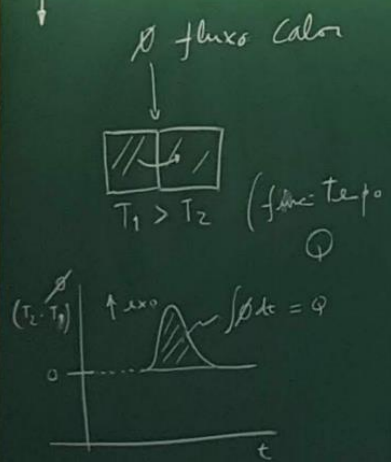


MAT 2020

MÉTODOS DE ANÁLISE TÉRMICA

DSC ... Metodologia e Aplicações

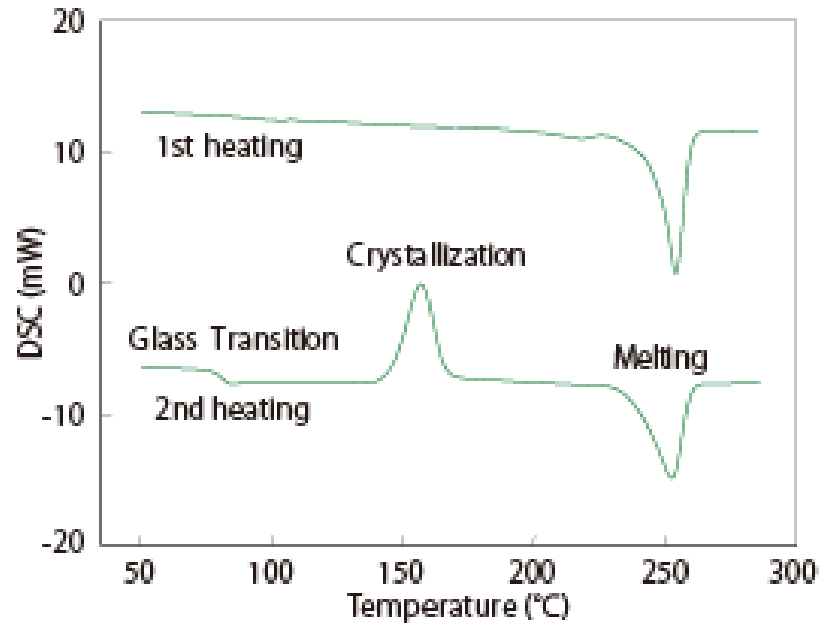
DSC → Calorimetria Diferencial (variação)



Silicone rubber & PET ...crystallization

3

<https://www.hitachi-hightech.com/global/products/science/appli/ana/thermal/index.html>



1st and 2nd heating DSC curve of PET.
In the 2nd heating (lower), T_g and cold crystallization peak are observed since the sample was converted to amorphous after rapid cooling

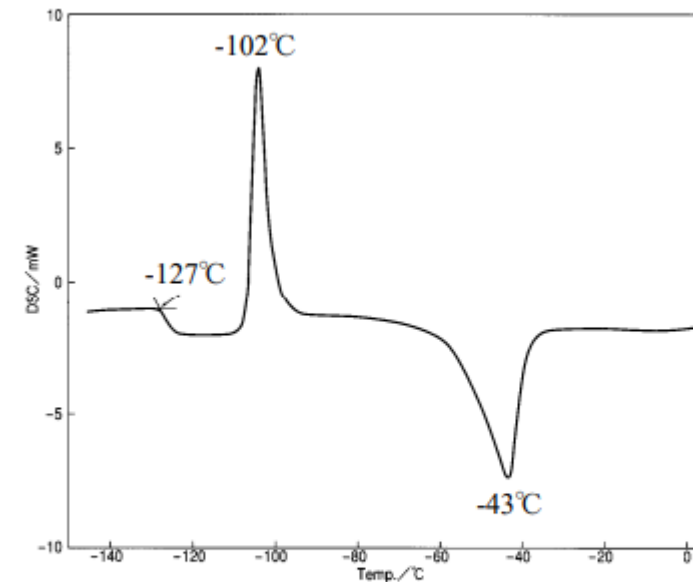


Figure 1 DSC curve for silicone rubber
Sample weight : 10mg
Heating rate : 10°C/min

UV Curing Adhesives

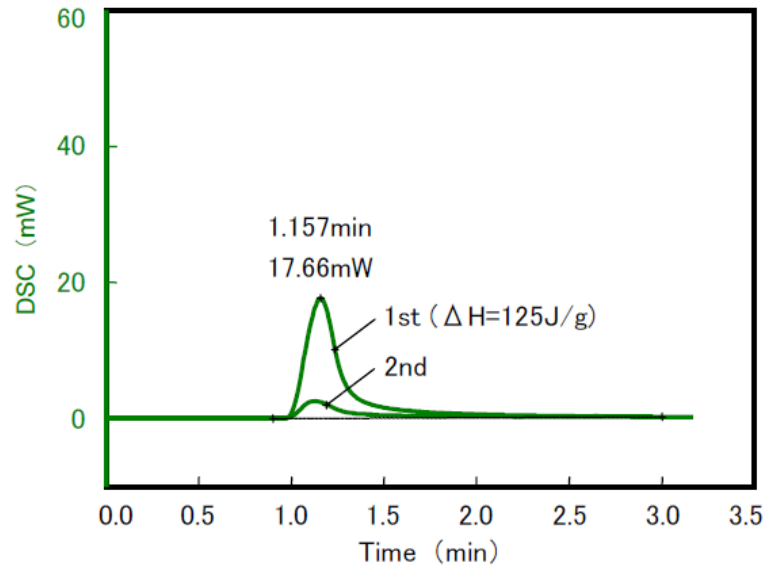


Figure 1 1st and 2nd irradiation measurement results
Irradiation intensity: 1mW/cm²

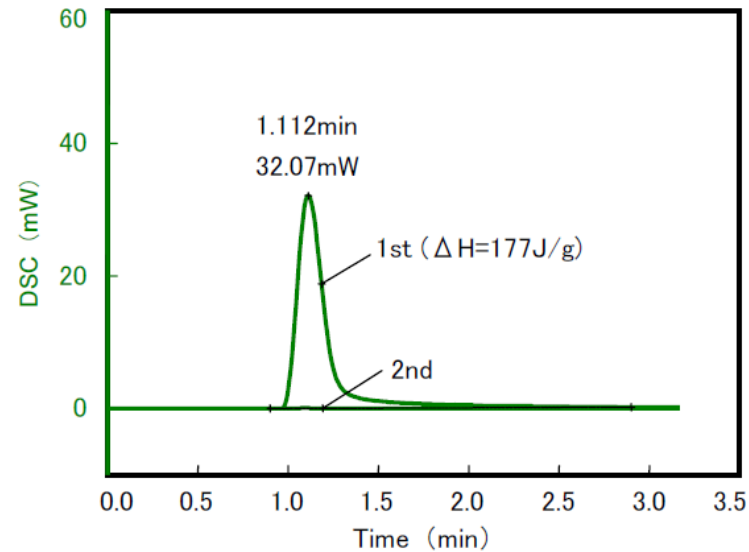


Figure 3 1st and 2nd irradiation measurement results
Irradiation intensity: 10mW/cm²

These results show the higher the irradiation intensity goes, the more curing reaction amount increases and the shorter the sample is cured. In order to cure enough with 10 seconds irradiation, the irradiation intensity greater or equal to 10mW/cm² is required.]

Pharmaceuticals: Crystal polymorphism and Crystallinity

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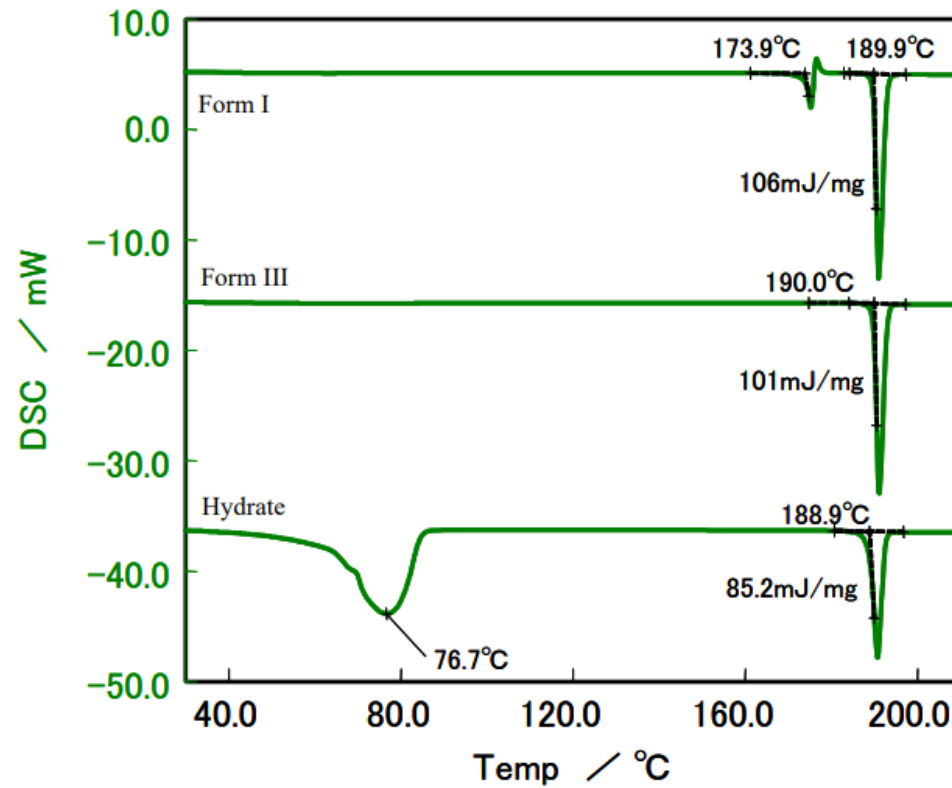
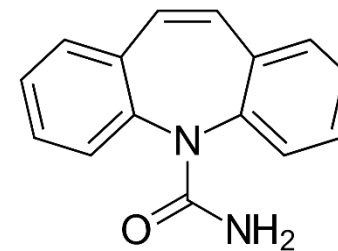


Figure 1. DSC results for Carbamazepine

Carbamazepine

tratamento da epilepsia e dor neuropática



Pharmaceuticals: Crystal polymorphism and Crystallinity

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Effect of milling

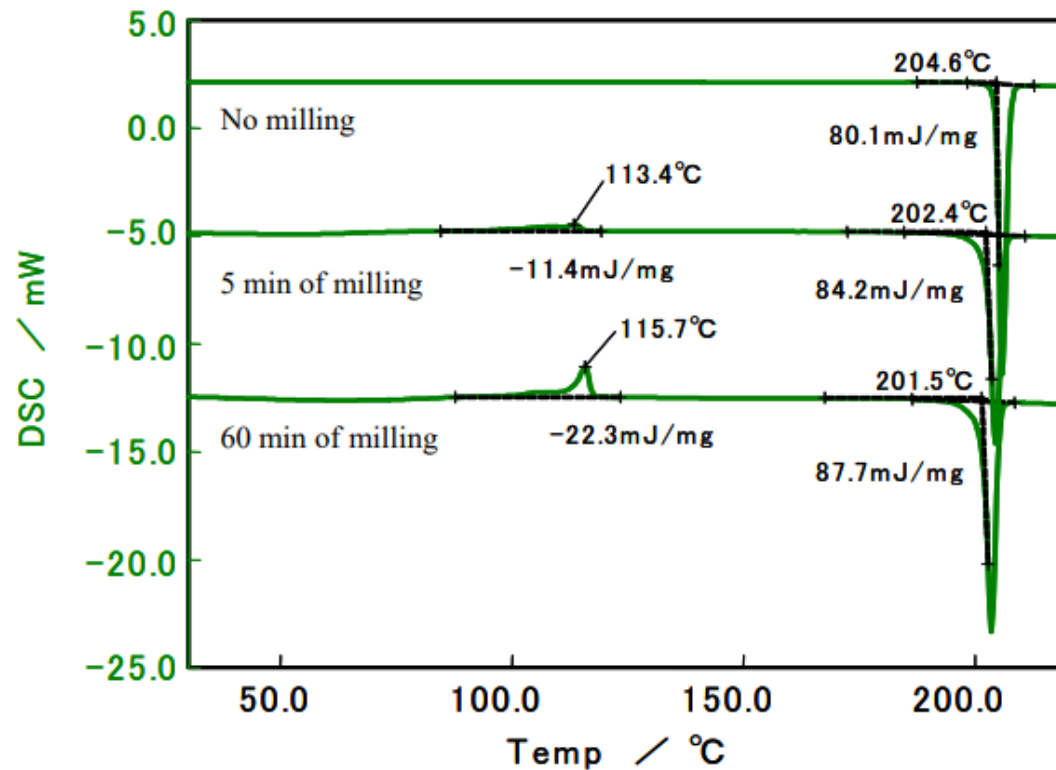
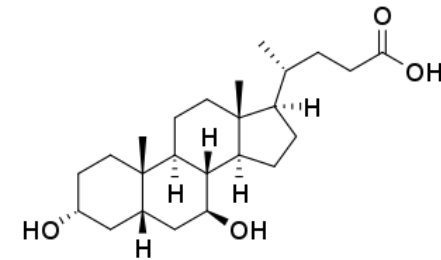


Figure 2. DSC results for ursodeoxycholic acid

Ursodeoxycholic acid

For the treatment of primary biliary cholangitis



Purity measurement

7

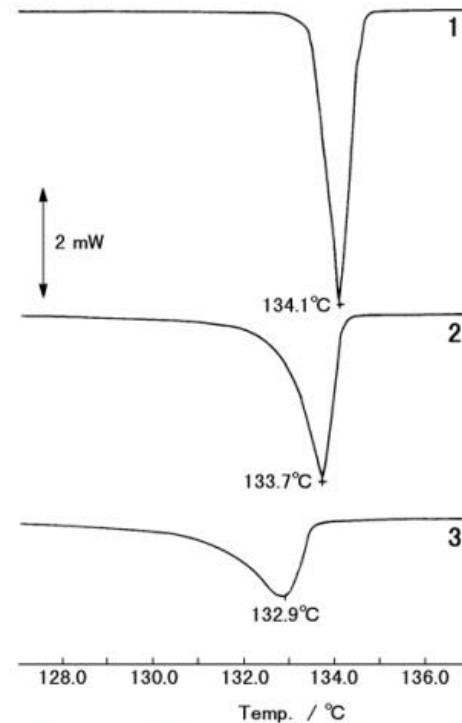


Figure 1 DSC Curve of Phenacetin
Purity 1 : 100%
2 : 99.3%
3 : 98%

$$T_S = T_0 - \frac{RT_0 X}{\Delta H_f} \frac{1}{F} \quad (1)$$

T_S : Observed sample temperature

T_0 : Fusion temperature of pure main components

R : Gas constant

X : Molar fraction of impurities

ΔH_f : Fusion heat of main components

F : Fusion fraction for temperature T_S

Melting fraction of chocolate

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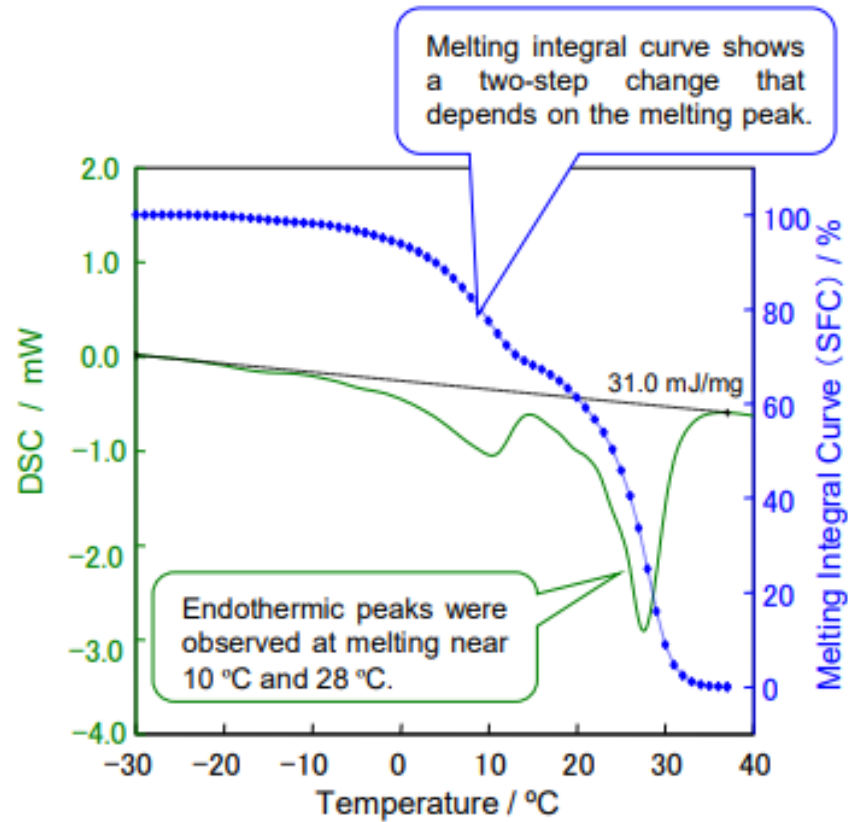


Figure 1 DSC curve and corresponding melting integral curve for ganache

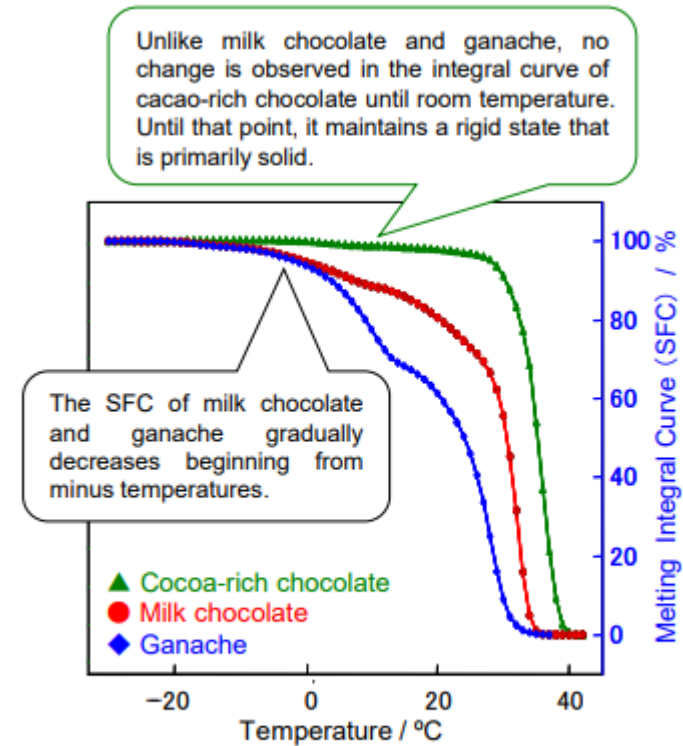


Figure 2 Melting integral curve of chocolate various types of chocolate

Thermal denaturation of a proteins

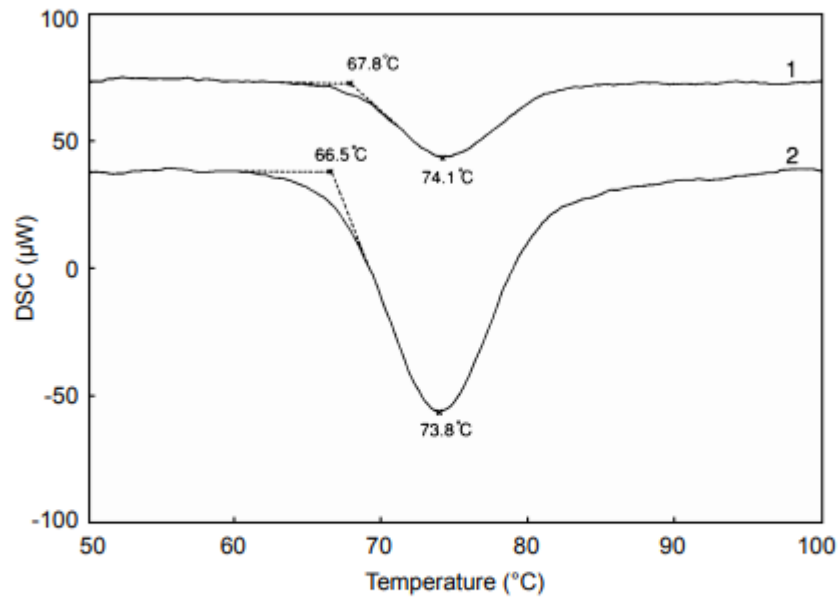
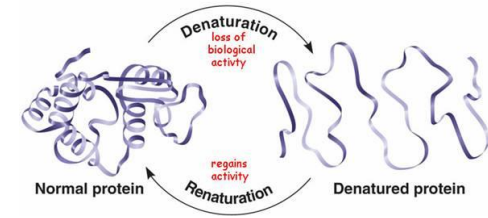


Figure 1 DSC Results for Lysozyme
1 : 1% solution
2 : 3% solution

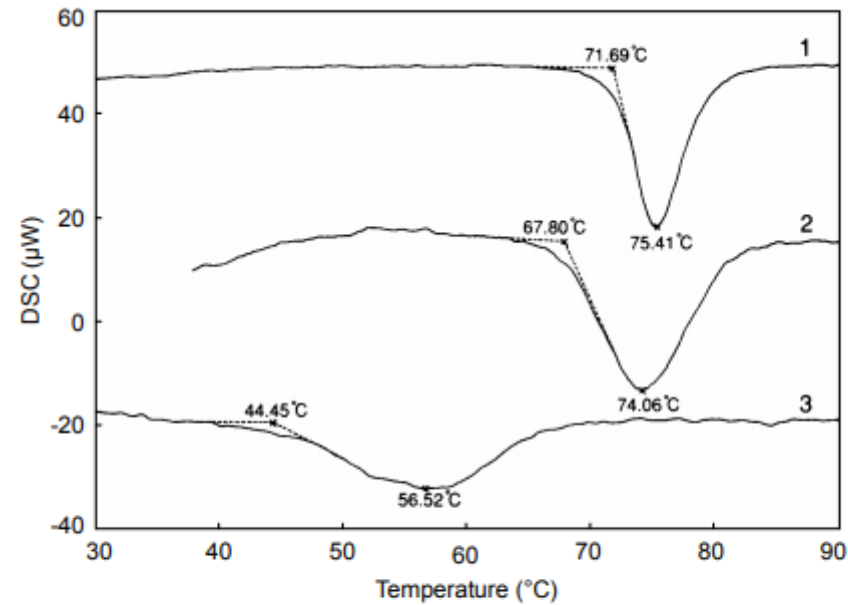


Figure 2 DSC Results for Lysozyme, Myoglobin and Albumin
1 : 1% Myoglobin solution
2 : 1% Lysozyme solution
3 : 3% Albumin solution

MW effect on glass transition

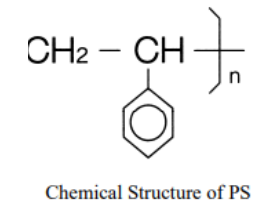
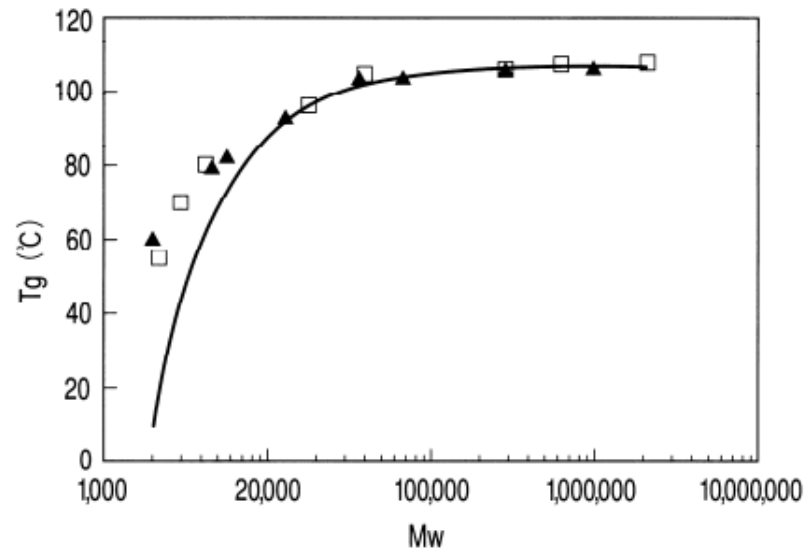
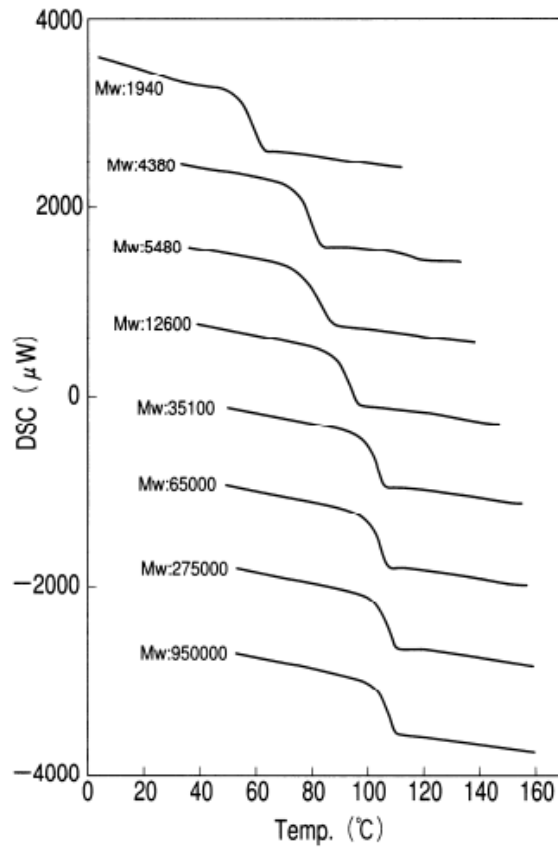


Table 1 The Molecular Weights and Molecular Weight Distributions of the PS Samples

Sample	Mw	Mn	Mw/Mn
PS 1	1940	1690	1.15
PS 2	4380	3570	1.23
PS 3	5480	5200	1.04
PS 4	12600	12000	1.05
PS 5	35100	30500	1.15
PS 6	65000	63700	1.02
PS 7	275000	258000	1.07
PS 8	950000	925000	1.03

Figure 2 DSC Measurement Results for the PS Samples