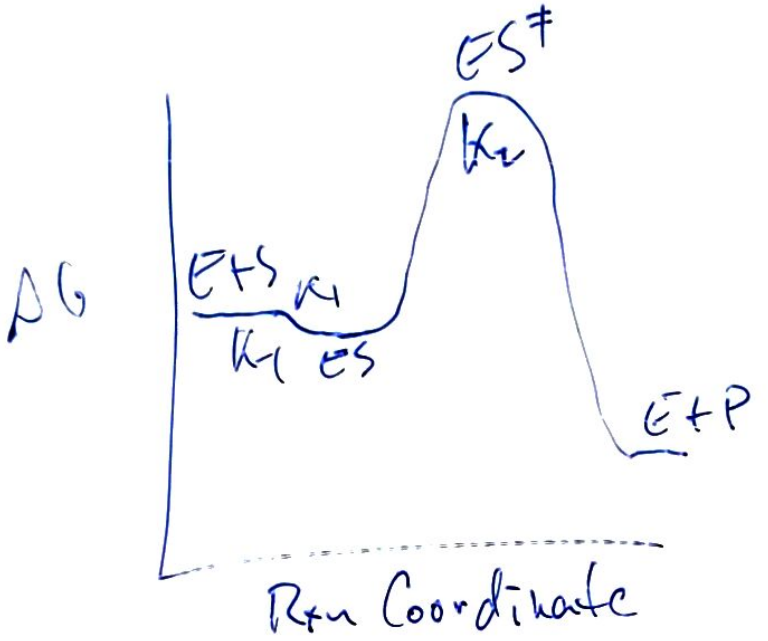
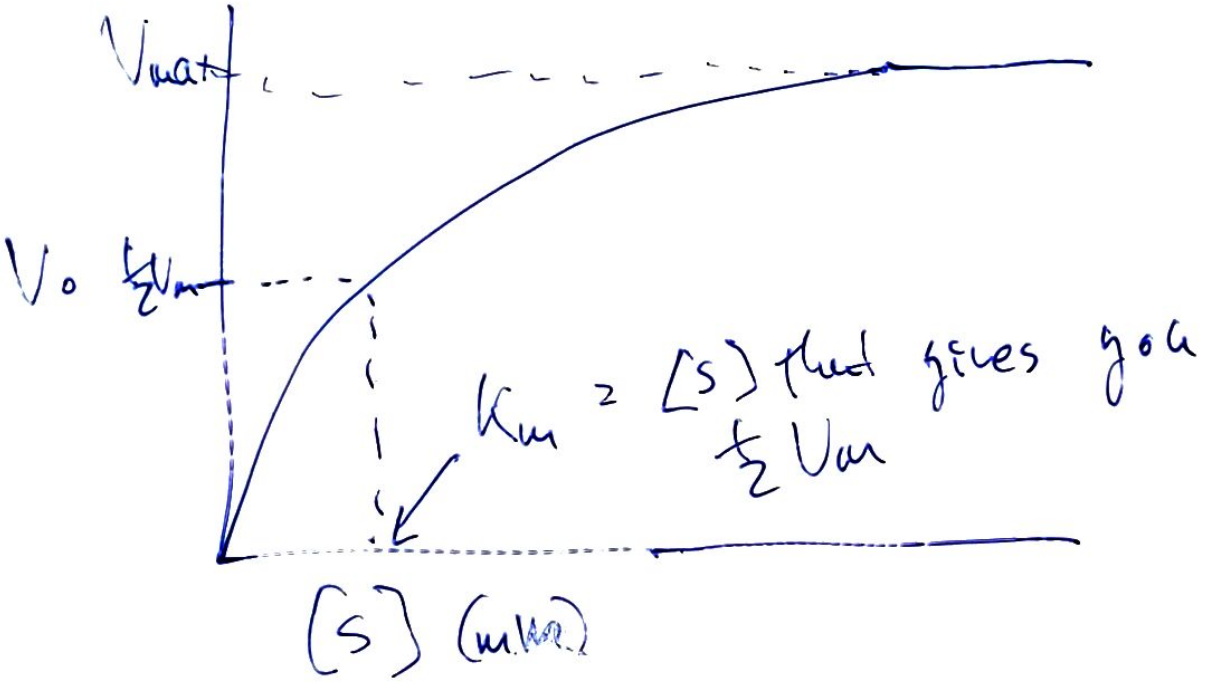
2 Oct 2019 CHEM106





$$K_m = \frac{K_{-1} + K_2}{K_1}$$

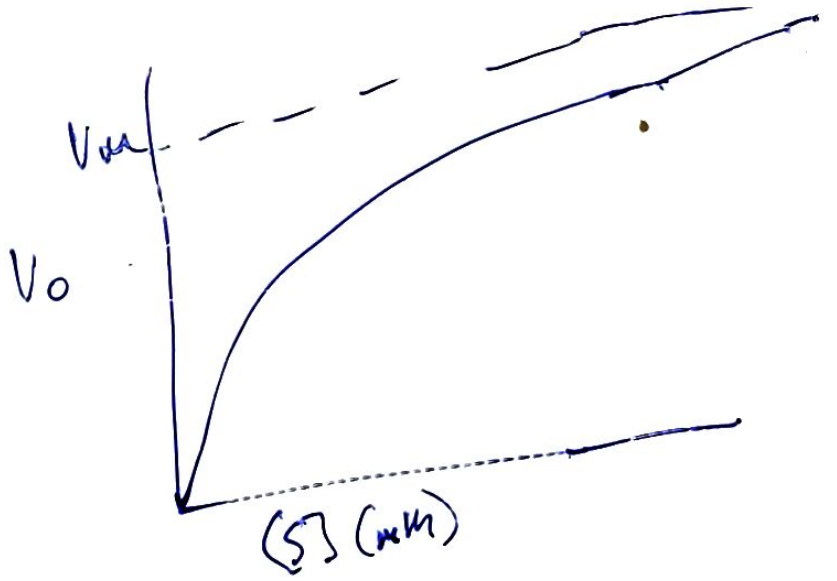
Rate of ES breakdown / Rate of formation of ES

Michaelis Menton

$$V_0 = \frac{V_m [S]}{K_m + [S]}$$

if $[S] = K_m$

$$V_0 = \frac{V_m K_m}{2 K_m} = \frac{1}{2} V_m$$



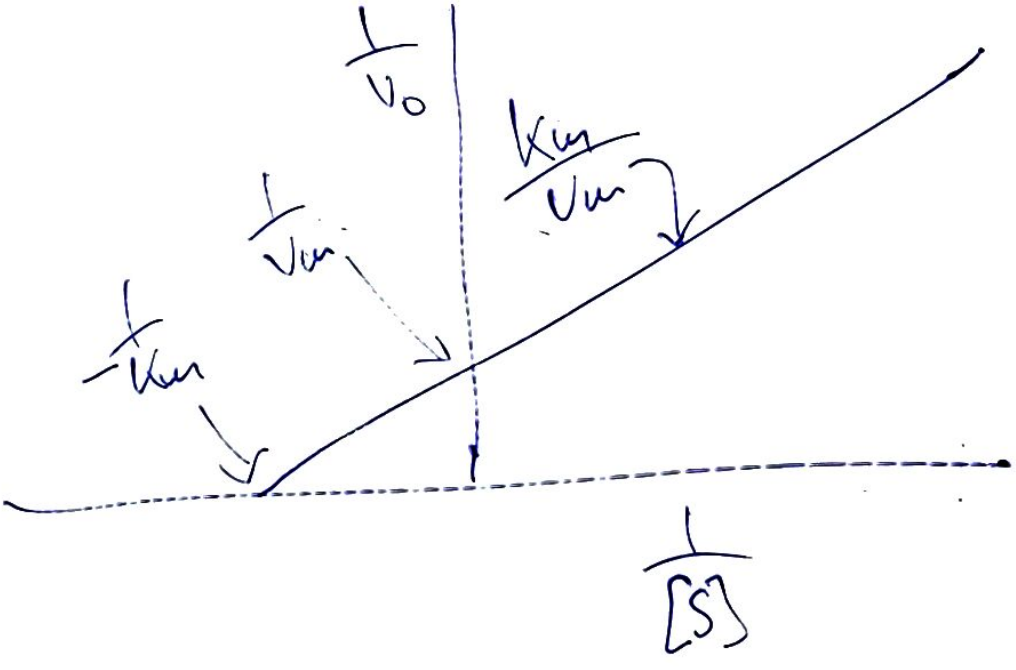
Lineweaver-Burk Equation

$$V_0 = \frac{V_m[S]}{K_m + [S]} \Rightarrow \frac{V_m[S]}{K_m} + \frac{V_m[S]}{[S]}$$

$$V_0 = \frac{V_m[S]}{K_m} + V_m$$

$$y = mx + b$$

$$\frac{1}{V_0} = \frac{K_m(1)}{V_m[S]} + \frac{1}{V_m}$$



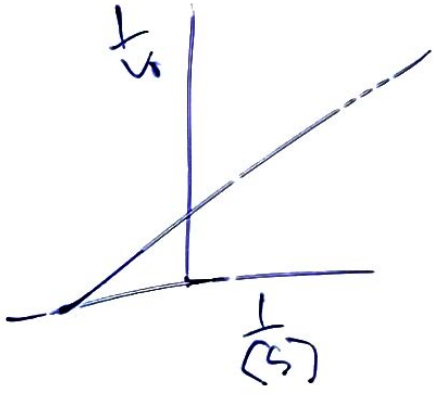
$[S]$	V_0	$\frac{1}{[S]}$	$\frac{1}{V_0}$
x	y		
x_2	y_2		
x_3	y_3		
x_4	y_4		

$[S]$	V_0	$\frac{1}{[S]}$
0.01	0.001	100
0.1	0.002	10
0.5	0.010	2
1.0	0.5	1

→

$\frac{1}{[S]}$	$\frac{1}{V_0}$
1	2
2	100
10	500
100	1000

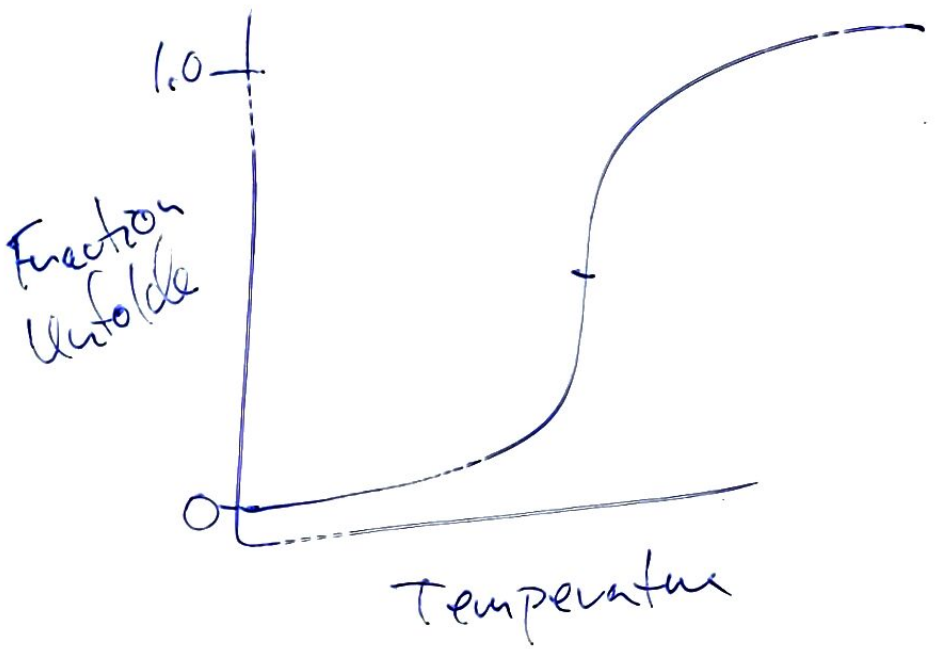
values increase ↓



$$\frac{1}{V_0} = \left(\frac{K_m}{V_m}\right)\left(\frac{1}{[S]}\right) + \frac{1}{V_m}$$

$$m = \frac{K_m}{V_m}$$

$$b = \frac{1}{V_m} \qquad V_m = \frac{1}{b}$$


1.0
Fraction
Unfolded
Temperature