

SURFACE (NON-POROUS) OR POROUS

SURFACE

- FIND Da $\begin{cases} > 1 \text{ M.T. LIMITED} \\ < 1 \text{ KINETIC LIMITED} \end{cases}$
- USE QUADRATIC TO FIND x
- FIND $V_{ACTUAL} = \frac{V_{MAX} \cdot x}{\alpha + x}$
- FIND $\eta_E = \frac{x(\alpha + 1)}{(\alpha + x)}$

DIMENSIONLESS!

POROUS

FIRST ORDER

- FIND $\phi = \frac{R}{3} \sqrt{\frac{k}{D}}$
- FIND x (SINH)
- FIND η_1 (TAUH)
- NOTE x @ $\xi = 0$!

$\phi < 0.3$ KINETIC LIMITED

ENZYME KINETICS

- FIND $\phi_{OBS} = \frac{R^2 V_{OBS}}{9 D S_{SURF}}$
- USE PLOT TO FIND RANGE FOR η_1

$\phi > 3$ M.T. LIMITED