

Rate Affecting Factors

Collision theory

Reactants must collide in order to react

Activation energy

Minimum amount of energy colliding particles need in order to react.

Fast Enough AND Correct Orientation

Factors of Reaction Rate

1. Temperature
2. Concentration
3. Surface area
4. Catalysts

Increase any of these, you get more collisions...so it goes faster!



Temperature

- Higher temperature**
= Higher kinetic energy
- = More likely to get over
the activation curve
- = faster rate

Concentration

Higher Concentration

= More particles

= More chances of proper collisions

= Faster rate

TO A POINT!!!



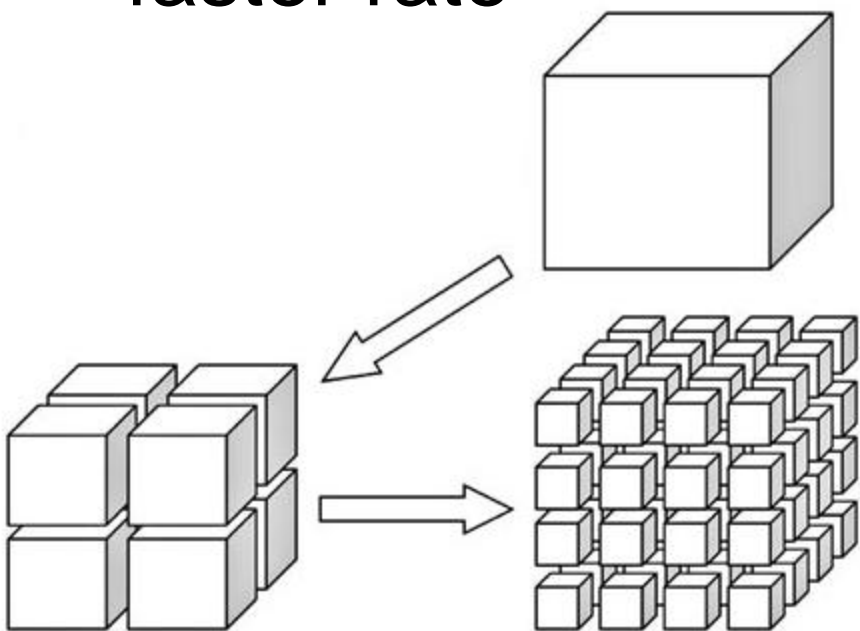
Surface Area

More Surface Area

= More access to
chemicals

= more collisions

= faster rate



Catalysts

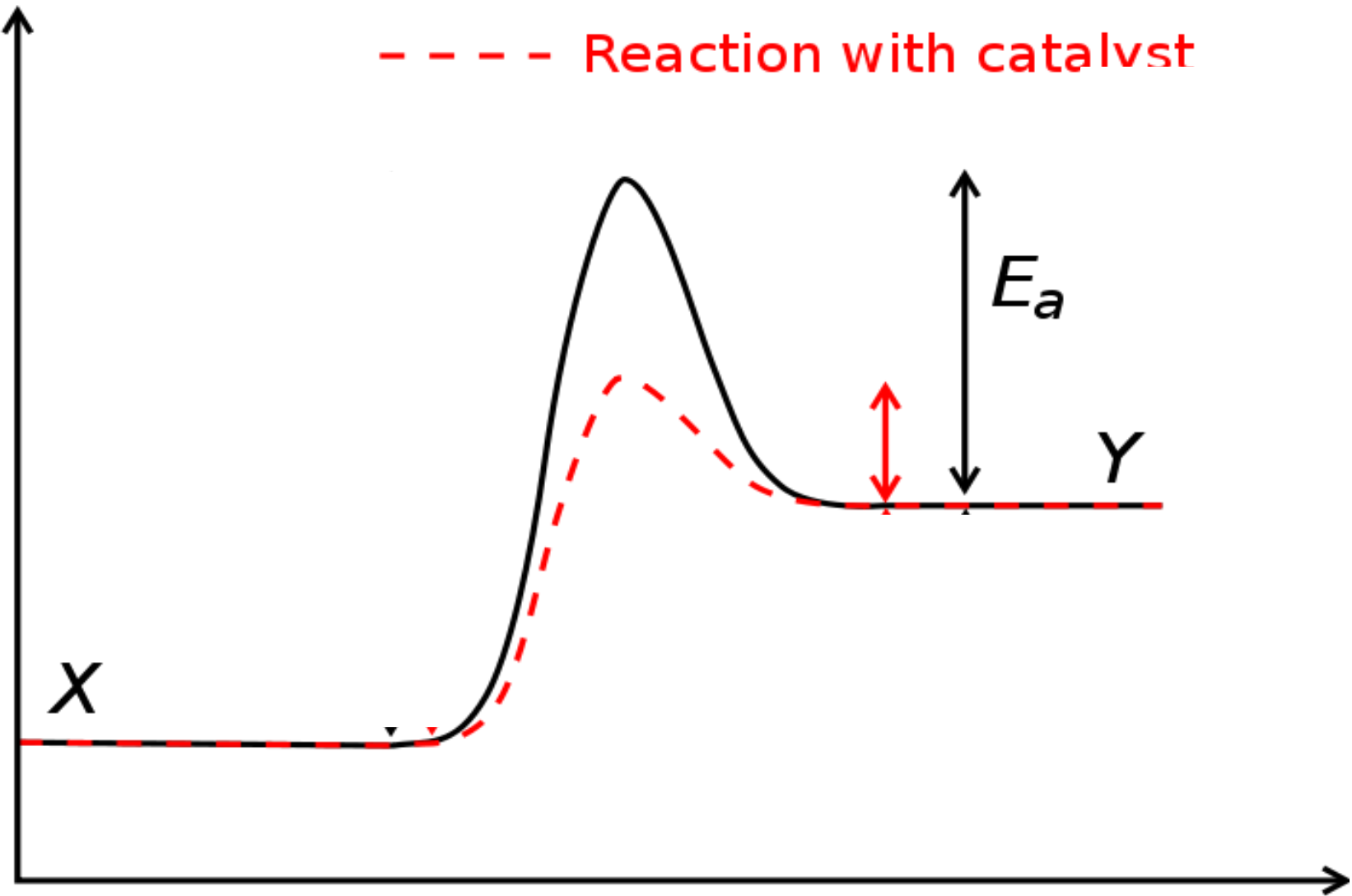
What is it?

- A chemical that you add to reaction
- Does NOT get used up during reaction
- Helps orient molecules to reach transition state easier
- So you do not need as much energy
- **Lowers Activation Energy**
= faster reaction



Energy

— Reaction without catalyst
- - - Reaction with catalyst



Reaction path

Changes # of Collisions	Changes Activation Energy



BECAUSE it changes the # of EFFECTIVE collisions