

A satellite-style map of the world with a glowing yellow and red path across the continents. The path starts in North America, goes down to South America, then across the Atlantic to Europe, and finally to Africa. The text is overlaid on the map.

# Chasing the Magic

Tom Henson

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Chemical Kinetics is the study of how fast chemical reactions occur

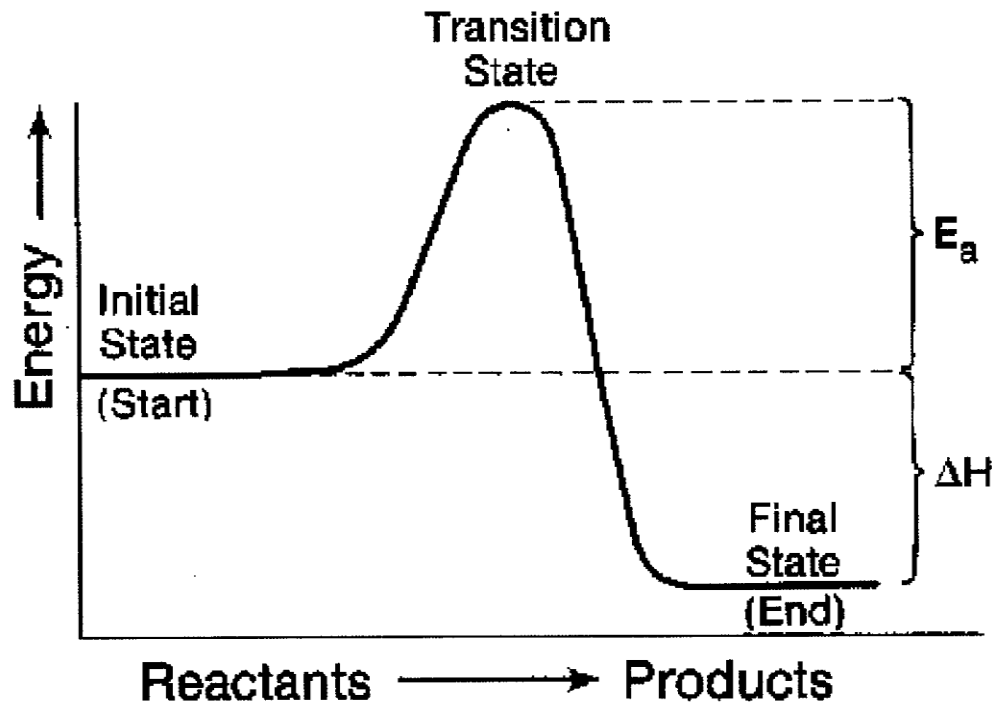
How do chemical reactions occur?

How does the reactant become a product?

# Factors Affecting Kinetics

- 1) Physical state of the reactants
- 2) Concentration of the reactants
- 3) Temperature of the reaction
- 4) A catalyst presence or not

# Transition State



Arrhenius equation

$$k = Ae^{-E_A / RT}$$

$k$  - rate constant

$E_A$  - activation energy

$T$  - temperature

$R$  - gas law constant

# Model Reactants & Products with Gaussian

Guess at the Transition State and model

From the model create a series of pictures of the reaction pathway

Animate the pictures of the reaction pathway

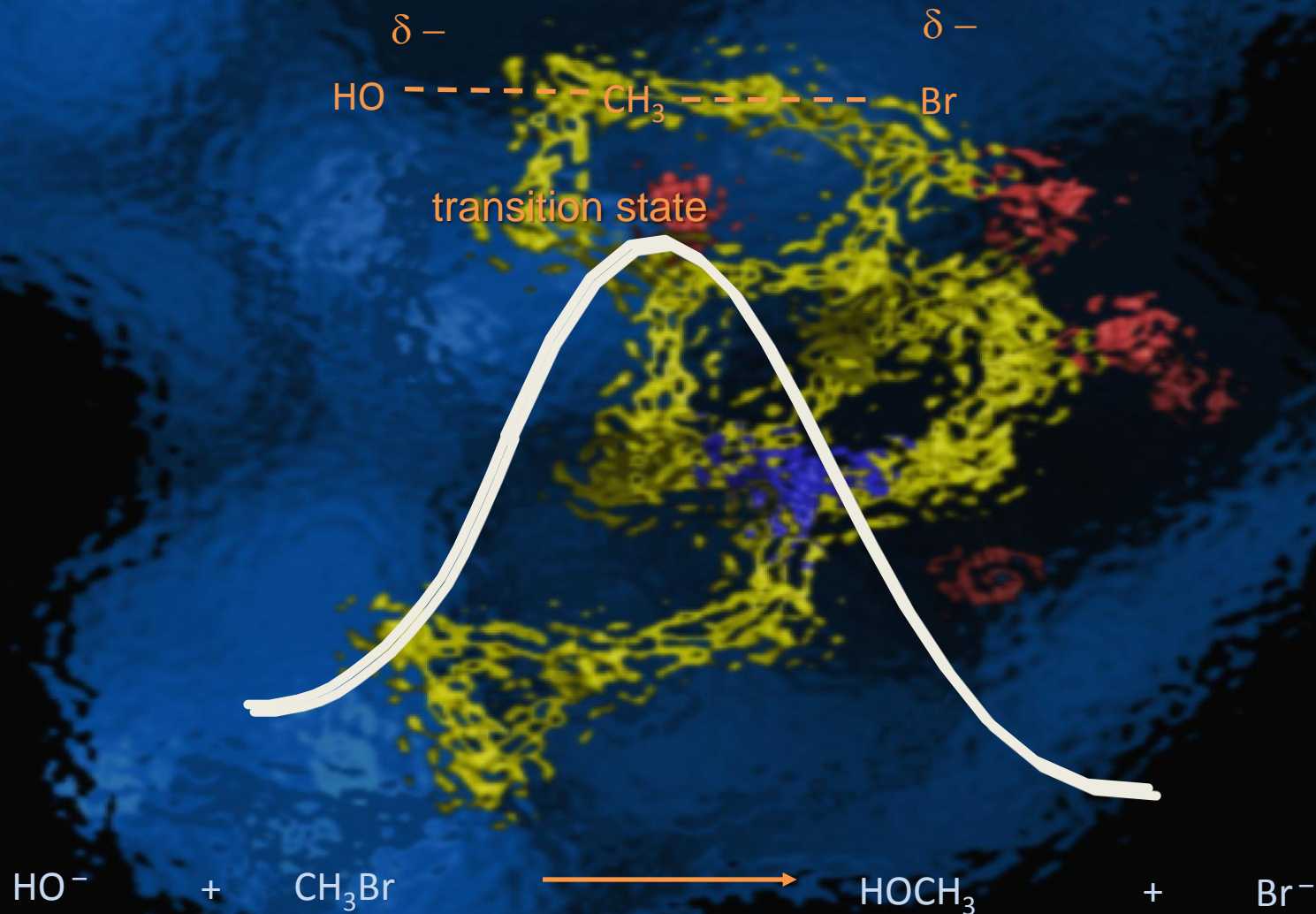
# The Reaction



Transition State Guess



# Bimolecular Mechanism



# Current Status

Learning Curve on Gaussian now smaller

Implemented Model for reactants, Products, & T.S.

Target next week to have component pictures for animation