



14. Chemical oscillators

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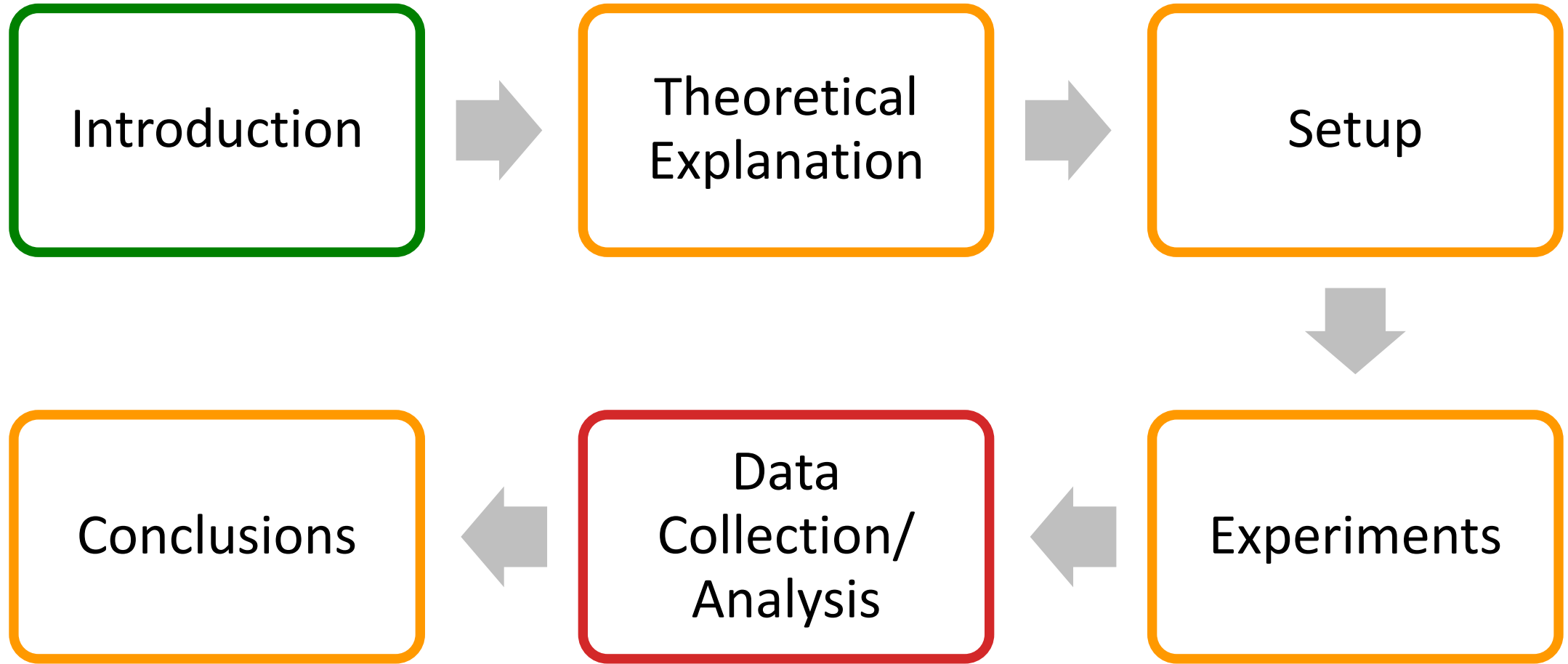
Task

Example of an oscillating chemical reaction is the **Manganese catalyzed Bromate-Malonic Acid reaction** which results in periodic **color changes**. Investigate how **temperature and turbulence** affect the **velocity of the chemical reaction, number of oscillations and color intensity**.

- Bromate-malonic acid reaction
 - Oscillations of absorption(color)/CO₂ production
- Velocity, # of oscillations, color intensity




Outline



 Well done

 Good

 Work on



Explanation of Theory/Experiments

- Chemical oscillator explanation
- Chemical equilibrium & velocity
- Correct chemical equations
- Oscillations: period and time (temp.)
 - Reaction → less oscillations
- Saturation
 - Decrease in temperature
 - Reasoning for product vs. reactant shift
 - Turbulence → homogenised (reaction time explanation)
 - Units/range
- No repetitions → error, trend, etc.
 - 2 temperatures
- Linear increase (oscillation period vs. time at temp.)

Rating: 3.5/6



Discussion Topics

Theory

- Temperature (endothermic/exothermic)
- Equilibrium

Experimental Setup

- Temperature control
- Software error (non homogeneous solution)
- Determination of end of oscillation (damping)

Error

- Experiments
- Trials
- Expectations for extreme temperatures



Discussion

