



2. Liquid layers

Opponent:

Team Romania - Limitless

Reporter:

Team New Zealand

Task of the problem

Water and vegetable oil do not mix and form two layers in a beaker. It is possible to fill the beaker with many more layers of immiscible fluids. How many layers can you obtain? Investigate the motion of the interfaces if the beaker is disturbed or shaken.

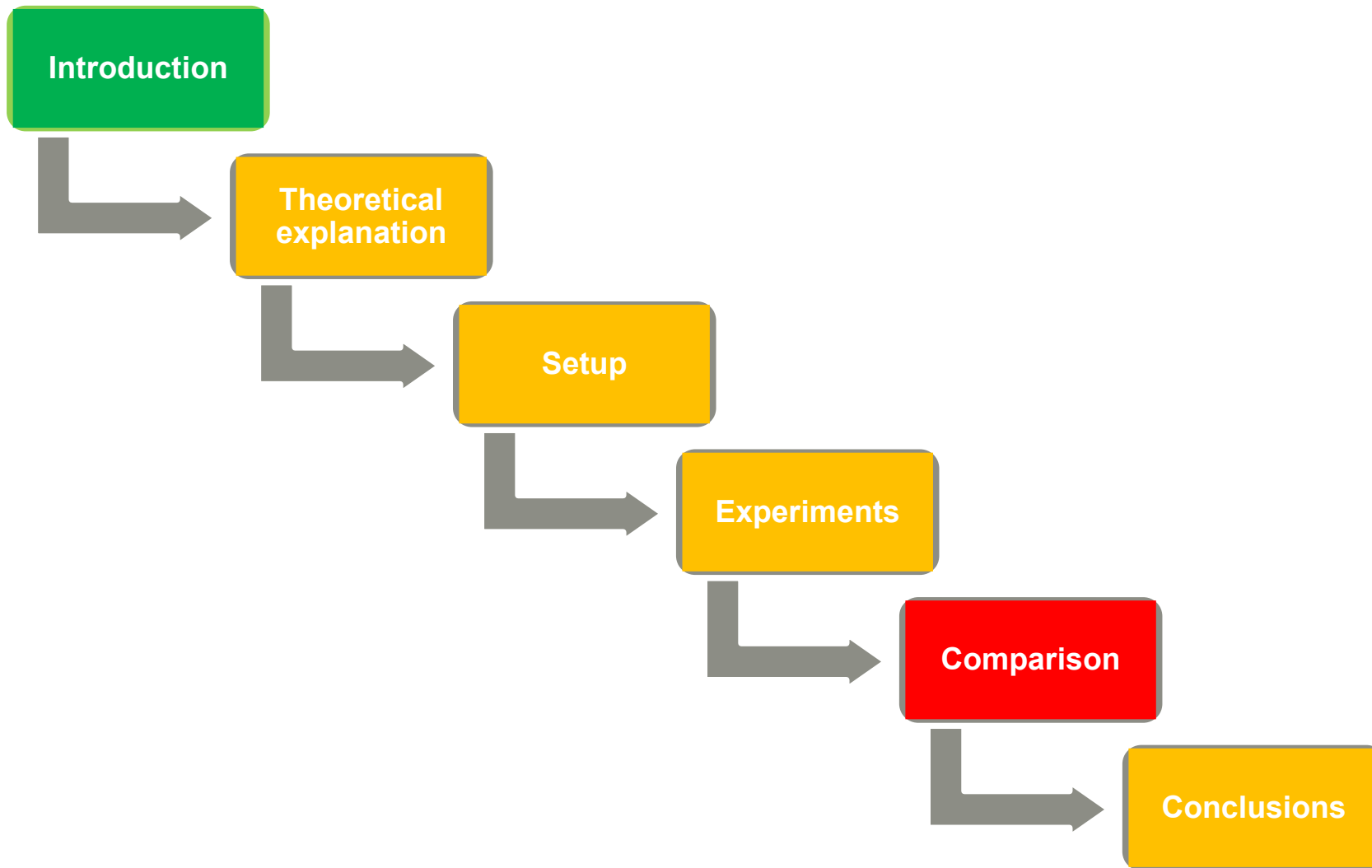
Immiscible fluids, Polar and Non polar molecules

- **Theoretical information**

Numerous layers and Interpretation of movement

- **Experimental**
- **Relevant parameters**

Outline of the reporter



Theoretical part



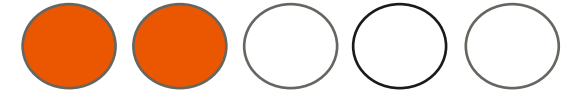
Strong points

- Chemical explanation of the immiscible fluids
- Relation between the polar and nonpolar molecules

Weak points

- Did not specify polarity is a spectrum
- The dipole moment explanation is missing
- Theoretical model is missing (how many layers can we create theoretically?)
- The hydrogen bonding theory is not present
- No mention of amphiphilic solutions
- Didn't specify that the short non polar molecules dissolve in the polar ones
- Unclear structure (hypothesis, conclusions)

Experimental part



Strong points

- Experimental setup is well detailed.
- Variety of substances used.
- Well presented the substance properties.

Weak points

- Substances from the table are not well specified and do not work for this experiment (wrong data about ethanol)
- Possible errors in mixing
- The motion is not investigated sufficiently, difference between shaking and disturbance
- The preparation of the apparatus is missing
- The motion of the beaker is uncontrolled

Discussion topics

- Dipole moment
- No theoretical model of the maximum number of layers
- The motion of the beaker is uncontrolled
- Difference between shaking and disturbance
- How were the substances insert into the beaker?
- Environmental conditions of the experiment
- Number of repetitions for clear results