

# Lab report | Lower Secondary Stage (6-8)

1<sup>st</sup> Semester | 2023-2024

**Subject:** Chemistry

**Chapter 9:** Energy changes in dissolving

**Objectives:**

- In this activity, you will place a thermometer in water and then add ammonium chloride and calcium chloride to find out how does energy changes when they dissolve in water.

## Planning:

What variable will you change in this investigation? (Independent variable)

.....Type of salt.....

What variable will you measure in this investigation? (Dependent variable)

.....Change in temperature.....

How will you make your investigation a fair test?

- Use the same volume of water
- Use the same mass of salt
- The same stirring time and speed (rate)

## Materials:

Ammonium chloride.

Calcium chloride

Water

beakers

Graduated cylinder

Thermometer

Top-pan balance

## Procedure:

1. Label two beakers with the names of the salts you will investigate.
2. Weigh ...2... g of ammonium chloride and place it in its labeled beaker.
3. Measure ...25.... mL of water and place a thermometer in it. **Record this initial temperature** in the chart on the activity sheet.
4. Pour the ammonium chloride into the water and swirl the cup. Watch the thermometer.
5. When the temperature stops changing, **record the final temperature**.
6. Repeat steps 2–5 for the other salt.



## Results

Substance	Initial temperature °C	Final Temperature °C	Change in temperature °C
<b>Calcium chloride</b>	<b>Example: 21</b>	<b>Example: 26</b>	<b>Final temp. – initial temp.</b>  <b>The reading will be a positive number. This indicates an increase in the temp.</b> <b>Exothermic change</b>
<b>Ammonium chloride</b>	<b>Example: 21</b>	<b>Example: 16</b>	<b>Final temp. – initial temp.</b>  <b>The reading will be a negative number. This indicates a drop in the temp.</b> <b>Endothermic change</b>

## Conclusion

- ✓ In an endothermic change, the temp. of the surrounding (water) will fall. It transferred into the solute particles to help them dissolve.
- ✓ In an exothermic change, the temp. of the surrounding (water) will increase. It transferred from the solute particles to the water.
- ✓ Dissolving can be either exothermic or endothermic.