MODELLING IGNEOUS ROCK FORMATION – CRYSTALS!

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Key Learning Objectives:

1. Identify, research and construct questions for investigation; propose hypotheses; and predict possible outcomes (ACSES001).
2. Design investigations including the procedure/s to be followed, the information required and the type and amount of primary and/or secondary data to be collected; conduct risk assessments; and consider research ethics (ACSES002).
3. Conduct investigations, including using map and field location techniques and rock and soil sampling and identification procedures, safely, competently and methodically for the collection of valid and reliable data (ACSES003).

*SEQ Figure * ARABIC 1: Igneous Rocks: Texture*

https://bit.ly/meriSTEMigneoustexture

Materials:

Geologists use the visual characteristics of rocks in order to identify the story of how those rocks came to be. In igneous rocks, one of the largest tell-tale signs about their formation is in their crystal size. Igneous rocks are generally categorised as either **extrusive**, a rock that has formed after being *extruded* at the Earth's surface or **intrusive,** a rock that forms without reaching the surface of the Earth.

In this practical, we will investigate what factors causes discrepancies in the size of crystals in igneous rocks and predict what sort of crystals we would expect to see in extrusive and intrusive rocks.

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Salol	Beaker
Gauze mat	Heat mat
Stirring rod	Bunsen burner
6x microscopic slides	Tripod
Thermometer	

Method:

1. Refrigerate two of your microscopic slides
2. Set up a heat mat, Bunsen burner, tripod, and gauze mat. Place a beaker full of water atop this setup to create a water bath.
3. Begin heating the water bath on a low flame with a thermometer placed in the water. We want the water to reach approximately 45°C. **If the water is too hot the experiment will not work**.
4. Add two teaspoons of salol to a test tube and place this test tube in the water bath.
5. Retrieve your microscopic slides from the fridge and use a stirring rod to add a few drops of the melted salol to one of your slides. Cover the slide with your other refrigerated slide.
6. Repeat this process using two more (room temp) microscopic slides.
7. Observe and record your results.
8. **Using the results of your experiment, design a similar process that will yield the largest crystals possible. Check this with your teacher and then carry it out.**

Method for yielding largest crystals possible:

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Aim:

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Hypothesis:

_____

_____

_____

__Risks and Precautions:

_____

_____

Results

Which set of slides created the largest crystals? Which set of slides formed crystals earlier?

_____

_____

_____

Based on the results of your experiment, what size crystals would you expect to be associated with extrusive and intrusive igneous rocks?

Extrusive:

_____

_____

Intrusive:

_____

_____

Based on your reasoning, sort the igneous rock samples provided by your teacher into two sets:

Intrusive	Extrusive

Results

Which set of slides created the largest crystals? Which set of slides formed crystals earlier?

_____

_____

_____

Based on the results of your experiment, what size crystals would you expect to be associated with extrusive and intrusive igneous rocks?

Extrusive:

_____

_____

Intrusive:

_____

_____

Based on your reasoning, sort the igneous rock samples provided by your teacher into two sets:

Intrusive	**Extrusive**

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