Igneous Rocks: Cooling Crystals
Part 1

Problem statement: What is the relationship between rate of cooling and crystal size?

Safety:
Heat hazard - Do not touch or splash liquids.
Supply – only use amounts of chemicals as directed.
Disposal – do not pour liquid down sink, dispose of in labeled recycle containers.

Materials:

- Baby food jar
- Masking tape (for baby food jar)
- Heated water solution, 100 ml
- $MgSO_4$ (in a cup)
- Spoon
- Pipe cleaner
- Magnifying lens

Procedure.

1. Label baby food jar with: Names, Period, and as "Cooled Slowly" or "Cooled Quickly" – as directed by the teacher.
2. Obtain 100 ml of heated water solution and place in baby food jar
3. Slowly add some Epsom salts and stir. Stir in $MgSO_4$until no more will dissolve; ensure there is no waste.
4. Wrap pipe cleaner around a pencil to form it into a shape that looks like a stretched spring. Remove from the pencil and place inside of the jar
5. If your jar is labeled "Cooled Slowly" place it on the cart shelf labeled with your period. If your jar is labeled "Cooled Quickly" place it on the tray as indicated, and your teacher will place it in the refrigerator.
6. Clean up the lab station – ensuring all supplies are washed and returned to their proper location. Wash the table/counter where you were working.

Prediction: What is your hypothesis about how the size of the crystals in the jars that are cooled slowly, in the classroom, will compare to the size of the crystals you cooled quickly, in the refrigerator? Why?
Record in your notebook

If rocks are cooled quickly, then the size of the crystals will be _____ compared to rocks that more slowly, intrusively. This is caused because . . .