# Title Information

Ishika Patel

Igneous Rock Identification Lab

July 6, 2020

N/A

Table of Contents

[Title Information 1](#_Toc44940933)

[Data and Observations / Calculations 2](#_Toc44940934)

[Exercise 1: Identification of Igneous Rocks 2](#_Toc44940935)

[Data Table 1. Igneous Rock Identification 2](#_Toc44940936)

[Photo Requirements 3](#_Toc44940937)

[Lab Question Answers 4](#_Toc44940938)

[Exercise 1 Questions 4](#_Toc44940939)

[Conclusions 5](#_Toc44940940)

[References 5](#_Toc44940941)

# 

# 

# Data and Observations / Calculations

## Exercise 1: Identification of Igneous Rocks

### Data Table 1. Igneous Rock Identification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Specimen #** | **Texture** | **MCI** | **Composition** | **Name** |
| **19** | Porphyritic | 0-15% mafic crystals | Felsic | Granite |
| **20** | Phaneritic | 45-85% mafic crystals | Mafic w/ Intermediate Crystals | Gabbro |
| **21** | Aphanitic | 45-85% mafic crystals | Mafic | Basalt |
| **22** | Phaneritic | 85-100% mafic crystals | Ultramafic (bright green/yellowish) | Peridotite (Possibly Olivine!) |
| **23** | Aphanitic | 0-15% mafic crystals | Felsic | Rhyolite |
| **24** | Phaneritic | 16-45% mafic crystals | Intermediate (brownish tint) | Diorite |
| **25** | Aphanitic | 45-85% mafic crystals | Mafic | Basalt |
| **26** | Glassy | N/A | N/A | Obsidian |
| **27** | Vesicular (grainy, bubbles) | 16-45% mafic crystals | Intermediate | Pumice |
| **28** | Pyroclastic | N/A | N/A | tuff |

## Photo Requirements

Exercise 1, Step 2: arrange rocks in numerical order in well-lit areaA picture containing cat, different, box, various

Description automatically generated

# Lab Question Answers

## Exercise 1 Questions

1. **What are magma intrusions? Which specimens were formed by this process?**

Magma intrusions occur when “A body of magma cools and solidifies below Earth’s surface” (HOL Lab, 2020). The three common types of intrusions, items I attribute to the specimen formed by this process, are sills dykes and batholiths (The Geological Society of London). Sills are horizontal sheets of dipping igneous rock (The Geological Society of London). Dykes are vertical dipping sheets (The Geological Society of London). Batholiths are intrusions that are thicker in width and slowly make their way up (The Geological Society of London).

1. **What is a felsic igneous rock? Which specimens are felsic?**

Felsic igneous rocks are an igneous rock class that is classified as a lighter colored igneous rock (HOL Lab, 2020). Felsic igneous rocks are low ranking in MCI with about 0-15% mafic crystals and are often composed of quartz and feldspar (HOL Lab, 2020). Quartz, K-spar, select granites, rhyolite are all specimens that are felsic (HOL Lab, 2020)

1. **Use Bowen’s Reaction Series to describe how different igneous rocks form from a single body of magma. Which specimen formed at the highest temperature? Explain your answer.**

The Bowen’s Reactions Series outline show different igneous rocks form from a single body of magma due to varying temperatures of the rocks. The variance of mineral, ranging from Felsic to Mafic are heavily “influenced by their crystallization properties” (HOL Lab, 2020). From one body of magma and the conditions for the Bowen’s Reactions series igneous rocks form Olivine, Pyroxene, Amphibole, Biotite, K-Spar, Muscovite to Quartz can be formed (HOL Lab, 2020). The specimen formed at the highest temperature is Olivine (HOL Lab, 2020).

1. **What type of igneous rocks are produced by volcanic explosions? What specimen resulted from this process?**

“Pyroclastic [textured igneous rock] is the result of volcanic explosions which produce rocks composed of multiple particles” (HOL Lab, 2020). With this pyroclastic textured igneous rock, the specimen of Tuff can be resulted from this process (HOL Lab, 2020).

# Conclusions

In this identification lab, I was able to apply much of the textbook knowledge I have on Igneous rocks. Beginning with simply identifying texture, the different textures of igneous rocks are based on the way the magma has cooled. From a rapid cooling with glassy textures igneous rock to vesicular texture where gas bubbles were trapped in the cooling magma, the temperature of magma is very important to igneous rock (HOL Lab, 2020). The temperature is so much so important that the Bowen’s Reaction Series is a series of igneous rocks forming form one body of magma that are so different because of the reaction to residual magma at different temperatures. A greenish Olivine is created at the highest temperatures and a pinkish Quartz is attributed at the lowest cooling temperature! The final classification tool for igneous rocs that I applied as using the mafic color index to determine the percentage of mafic crystal and to narrow down the options of each rock. In this lab I learned much about the characteristics, origins and identification of igneous rocks.

# References

Physical Science Department. (2020, Summer). GEY111 HOL lab manual.  Colorado: CCCOnline.  Retrieved from class website at:

<https://ccco.desire2learn.com/d2l/le/content/2768021/viewContent/29148168/View>

Physical Science Department. (2020, Summer). GEY111 Lab Report Assistant.  Colorado: CCCOnline.  Retrieved from class website at:

<https://ccco.desire2learn.com/d2l/le/content/2768021/viewContent/29148187/View>

The Geological Society of London. (n.d.). Igneous Intrusions. Retrieved July 06, 2020, from <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3598.html>