**Crystals in Igneous Rocks**

When igneous rock forms (i.e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_), the size of the crystals depends on…

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* Slower cooling gives the molecules time to arrange in an organized   
    
  way -> \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Fast cooling often occurs at the Earth’s surface, and makes crystals   
    
  that are small enough they’re \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* *Really* fast cooling often occurs by water and can result in rock with   
    
  *no* crystals that is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This is often limited when many crystals begin forming at the same time in close proximity to each other.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Think about this for a second. Would high viscosity lead to bigger crystals or smaller crystals?

**Classification**

|  |  |  |
| --- | --- | --- |
|  | **Plutonic/Intrusive (Large, Visible Crystals)** | **Volcanic/Extrusive (Crystals Not Visible)** |
| **Mafic (Dark in Colour)** |  |  |
|  |  |  |
| **Felsic (Light in Colour)** |  |  |

**Other Common Extrusive Rocks**

**Obsidian**

* A volcanic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (i.e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* A result of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Dark/black in colour.

**Vesicular Rock**

* Contains many air bubbles called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* A result of fast cooling.
* If formed from *mafic* lava, will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is  
    
  called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* If formed from *felsic* lava, will be lighter in colour and will contain  
    
  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Intrusive AND Extrusive?**

In some situations, magma will start cooling underground, but will erupt before it’s finished cooling.  
  
What would that look like?