Daily Routine

- Sit in your appropriate seat quietly
- Have all necessary materials out
- All back packs on the floor
- All cell phones on silent and away in backpacks
- All IPods off and headphones out of your ears
- Hats off
- No food or drink except for water

Bell Work

- Compare and contrast rocks and minerals

- Describe one other mineral property talked about on Friday

Earth Science Announcements

Mineral Quiz on Wednesday

Igneous Rocks

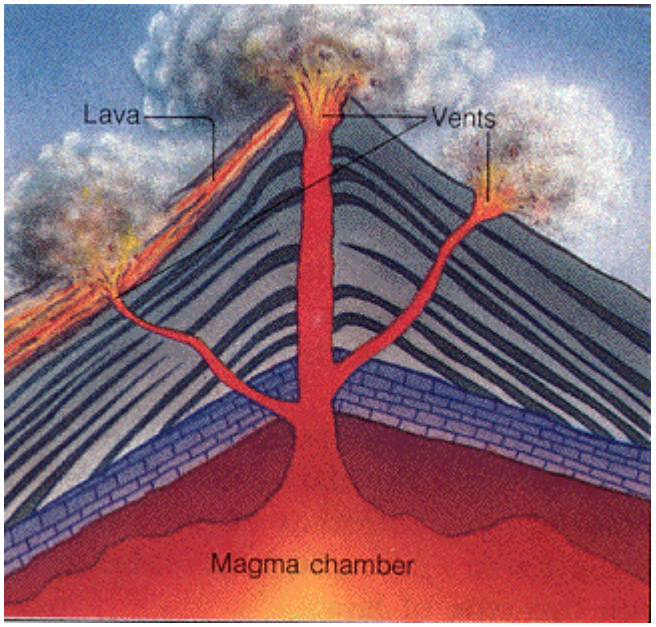
How are minerals affect by the different stages of the rock cycle?

I will be able to…

- Describe how and where igneous rocks form
- Explain how minerals form igneous rocks due to different cooling periods at different temperatures
- Compare and contrast felsic, mafic, and intermediate groups of igneous rocks
- Describe what igneous rock texture is

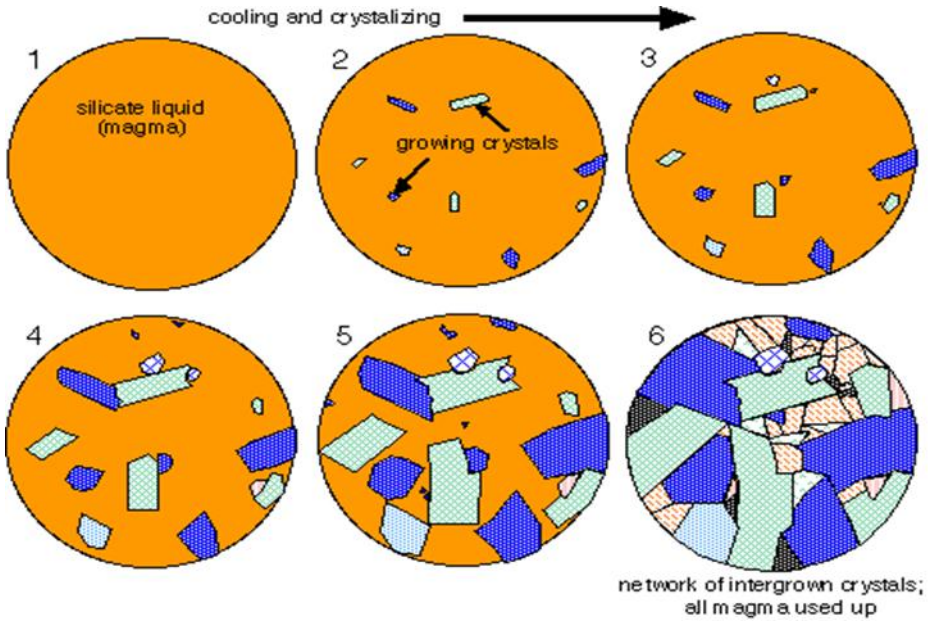
What are Igneous Rocks?

- Igneous rocks form due to the solidification of magma or lava
- Magma: is the molten or semi-molten form of rocks
- High in Iron, Silicon, and Oxygen
- Magma contains:
  - Minerals
  - Gases (CO_2 and Sulfur dioxide)
  - Water and Water vapor

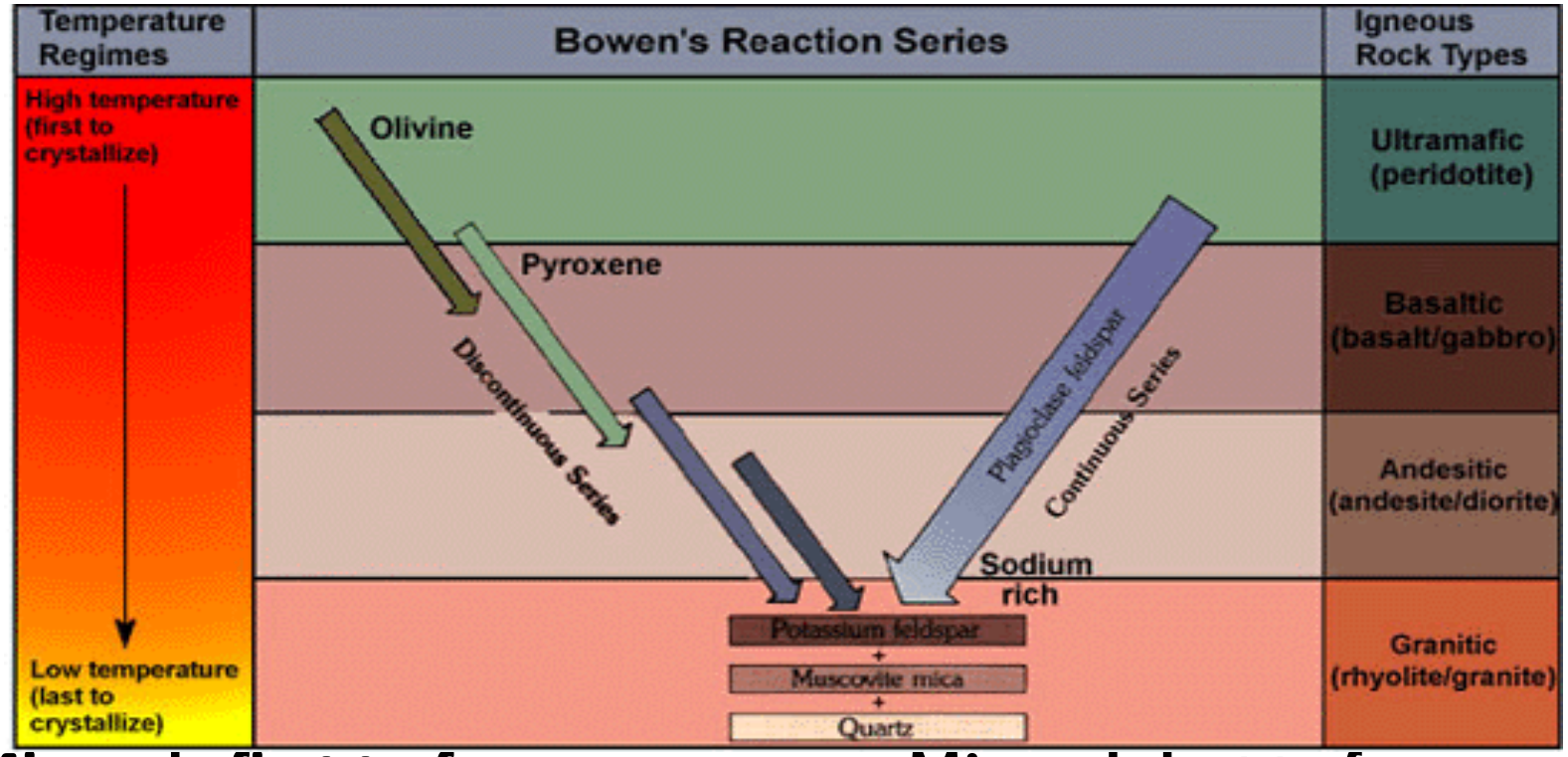


How do minerals condense to form rocks from magma?

- Fractional crystallization: the removal and separation of a melt of different minerals at different temperatures and different periods of cooling based on chemical composition



Bowen's Reaction Series



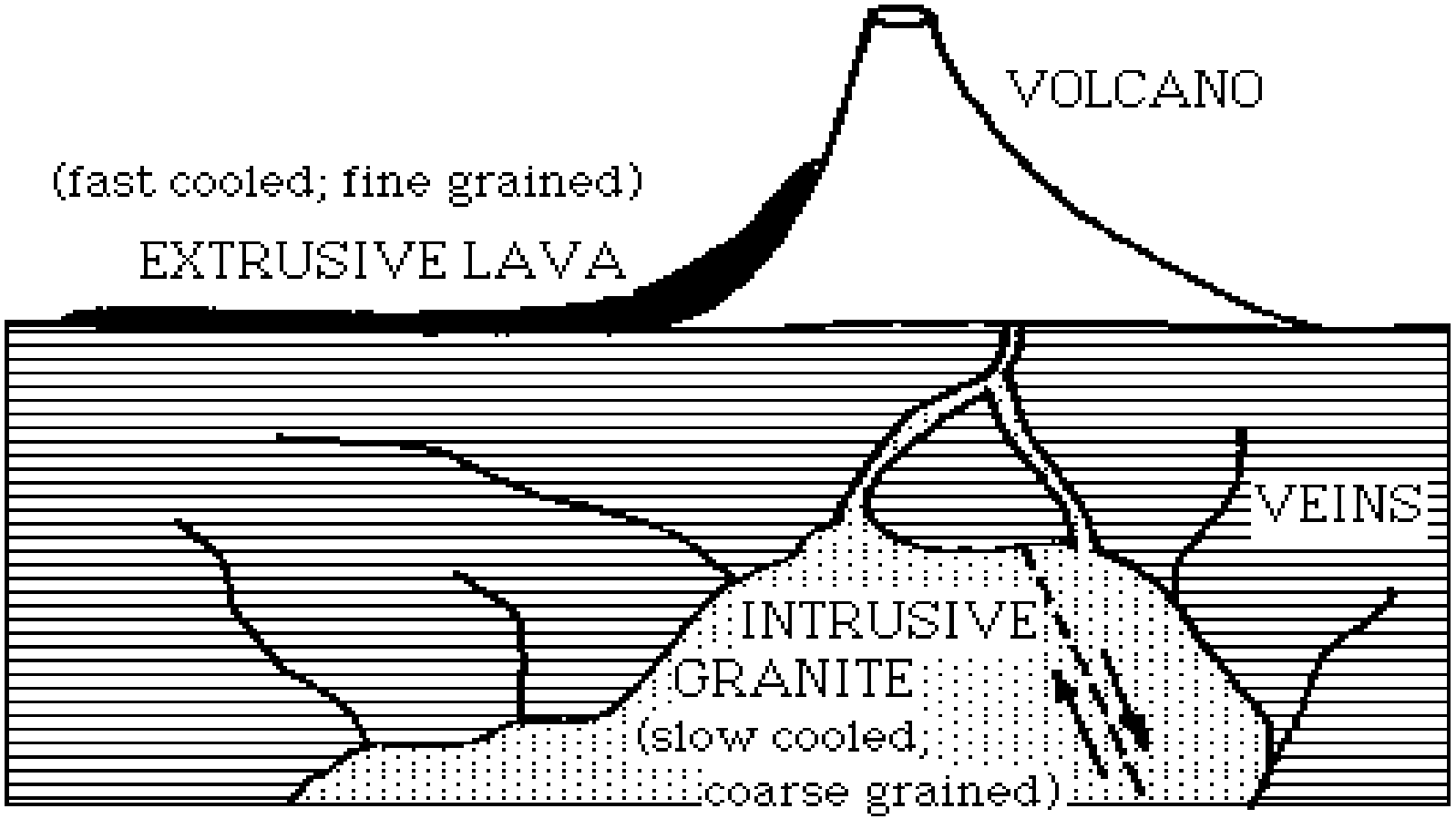
- **Minerals first to form:**
- Form at high temperatures
- Contains less silica (Si and O)
- High in iron
- Darker in color

- **Minerals last to form:**
- Form at lower temperatures
- Contains lots of silica (Si and O)
- Lighter in color

Felsic Vs. Mafic Igneous Rocks

Felsic	Intermediate	Mafic
• **Minerals have higher silica content** • **Lighter in color** • usually need longer periods of time to cool • Minerals often found in felsic rocks are quartz, micas, k-feldspar • **Examples: granite and rhyolite**	• **Minerals have medium silica content** • Contain some minerals with higher iron content • **50-50 mix** in dark and light color • Usually need longer periods of time to cool, but some minerals crystallize faster at hotter temperatures • Common minerals: quartz, micas, k-feldspar, and amphibole • **Examples: diorite and andesite**	• **Minerals have a lower content in silica** • Higher in iron (Fe) • Cool quicker than the other minerals • **Often darker in color** • Common minerals: olivine plagioclase, amphibole, and pyroxene • **Examples: gabbro and basalt**

Where can Igneous Rock form?



Intrusive vs. Extrusive

Intrusive

- Texture: Coarse (large visible crystals)
- Conditions to form intrusive igneous rocks:
  - Deep below the surface
  - Cool magma temperatures (
  - Long and slowing during crystallization

Extrusive

- Texture: Fine (microscopic crystals)
- Conditions to form extrusive igneous rocks:
  - Forms on the surface
  - Hot lavas that cool rapidly
  - Short and rapid cooling which yields little crystal development