

Re: Extra Credit Opportunity for Physical Geology Lab - Minerals

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Tue 9/6/2016 4:42 PM

To: Quarles, William A. <quarlesw@winthrop.edu>

Maria-Francesca Massaro
Monday Night 6:30-9:15 class.

1. Quartz is a silicate mineral with no cleavage and is considered glassy and transparent. Calcite is a carbonate mineral and contains carbonate ions (calcium carbonate). Calcite has two planes of cleavage is opaque and in terms of luster, dull. Both take crystal forms. However, quartz is harder than calcite, if you were to take both minerals and scrape them against each other the calcite will show scratches because it is softer (This is the hardness test- quartz reads 7 on the Mohs Scale and calcite reads 3). Also calcite can dissolve in acid.
2. Feldspar is the name given to a group of minerals that contain aluminum and silica ion. Feldspars are light colored and vary based on their impurities. Most of the time, quartz appears transparent or translucent. However, color is not the best way to identify silicate minerals because the colors can vary so much. Another way to tell the difference is to scrape quartz against feldspar; feldspar is a 6 on the Mohs scale and will show scratches when scraped against quartz. Also, quartz has no cleavage while feldspar range from good to excellent cleavage.
3. Both muscovite and biotite are mica minerals that have one perfect cleavage. The way to distinguish these two is by color. Muscovite is colorless and biotite can be variations of black.
4. Cleavage is the way light reflects along flat parallel surfaces (planes).
5. Minerals cannot be identified solely on their color because many minerals come in a different variety of colors.
6. Olivine, pyroxene, amphibole, biotite, plagioclase, orthoclase, muscovite, quartz.

On Sat, Sep 3, 2016 at 9:01 AM, Quarles, William A. <quarlesw@winthrop.edu> wrote:

For up to 2 points (20% of 10 points, so it is not insignificant), reply to this email (be sure you reply only to me) with **your** answers to the following questions, **before** 5:30 P.M., Wednesday, September 7 (next lab, but for both Monday and Wednesday labs).

Do your own work on this, that is, do not just cut and paste from an internet/digital source or from the digital version of the manual. Do not share or discuss with others, or blind copy your email to others. This is for you to learn and benefit from, not to help someone else's grades. We can do that during lab.

For full credit, your answers must be in the form of a complete sentence with correct grammar, spelling, and punctuation, except for #6 which you can just list.

I will email my answers to the group sometime between 5:31 and 6:00 P.M. on the due date, or present them during lab.

Al Quarles

1. What is the best way to tell the difference between quartz and calcite? explain
2. What is the best way to tell the difference between quartz and feldspar? explain
3. What is the best way to tell the difference between muscovite and biotite? explain
4. Describe mineral cleavage.
5. Why is color not an ideal property to use for identifying silicate minerals?
6. Name the eight major igneous rock-forming silicate minerals (hint, see the Bowen's Reaction Series).