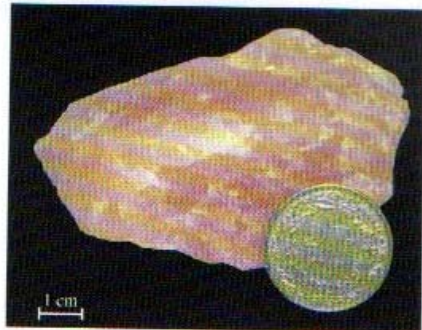


CE 20500 - Engineering Geology
Homework Assignment 2
Due February 7th, 2012

1.



(a)



(b)



(c)

Please identify the three (3) minerals shown in images (a), (b), and (c) above using the mineral identification flow chart on the following page, the crystal appearances, the mineral identification tests listed below, and material covered in class (and textbook).

- (a) This mineral does not react with HCl and it scratches glass. It does not have a particular taste.
 - Mention one of the main uses of this mineral

- (b) This mineral cannot be scratched with a nail but is scratched by a steel file. It does not react with HCl and does not have a particular taste.
 - Is this mineral problematical for construction projects? Why?

- (c) This mineral scratches glass and does not react with HCl, and does not have a particular taste.
 - It is a predominant mineral in what type of rock?

2. You wish to buy a ring at a jewelry store and you are not sure whether the 'stone' is a piece of glass or diamond. What quick diagnostic test can you perform in the store to verify the nature of the stone?

3. Pyrite (FeS_2) is a typical accessory mineral in ore deposits, and is commonly referred to as "fool's gold". Describe its most diagnostic characteristics. In addition, what chemical is

developed when water (H₂O) comes in contact with pyrite and what are the possible environmental consequences?

4. Both weathered chert and sand quartz pieces are common constituents in stream gravels, and both have the chemical formula SiO₂. However, weathered chert is not a particularly stable material in concrete when subjected to freezing and thawing cycles, whereas quartz does not have this problem. Explain why this is the case.

Mineral identification flow chart

