

GEOL 3041 – Igneous and Metamorphic Petrology – Dr. Henry, LSU

Timeline and logistics of the pet rock project

Late August (or first two weeks of class) - *choosing individual samples.*

Each student randomly selects a metamorphic rock sample from the Beartooth Mountains or Yellowstone. This rock sample is the semester-long pet rock "friend" that the student will get to learn more about than anyone else. The student is responsible for that rock throughout the semester. The student is asked to think of a personal name for the pet rock, besides any sample number that may be on the rock. Each rock should be introduced to the class by the "pet-parent", and state why the student chose that name.

Early September – *Initial sample preparation.*

Each student is responsible for cutting their own pet rock to optimize the information that is sought. This manner in which it is prepared is in consultation with Dr. Henry.

Early October – *complete petrography of the polished thin section of the pet rock.*

As soon as the thin sections are available each student should begin doing a detailed petrographic report on the thin section. Get input from Dr. Henry or the TAs. We will discuss with each student pair what might be the best imaging and analytical targets, and why. Every rock is different, as it is in any research project. It is important to identify opaque minerals as well with reflecting light petrography, with Dr. Henry's help. Then, a photomicrograph of a selected area will be used for further analytical work and the ultimate reports. Start background geological literature readings.

Early November – *start electron microprobe and SEM lab work.*

Each student will have an extended session with Dr. Henry or TAs in the SEM/microprobe lab, typically 2-4 hours. During this time, the student will take a backscattered electron image(s) of the area(s) of the earlier photomicrograph, verify the identity of the minerals in the BSE image with energy dispersive spectrometry and quantitatively analyse selected minerals in the BSE image. If the microprobe is functioning, during this process there is generally time to discuss normalization procedures for individual minerals, and application of the appropriate thermobarometers for their sample. Following the analytical session, a variety of programs are made available to the students to normalize the mineral formulae and calculate conditions of formation.

Mid November – *preliminary 10 page written report and 10-12 minute oral presentation to be given to Dr. Henry.*

The culmination of the pet rock project is a written and oral report of the students findings in a geologic and petrologic context. In other words, the student will be taking her/his results and putting them together as if he/she were submitting the findings to a professional journal and giving an oral presentation at a professional meeting. The 10 page written report should include an abstract, introduction, geologic background, analytical techniques, results and discussion/conclusion sections. Some of the information such as the petrographic report and raw analytical data should be included in an appendix and will not be counted as part of the 10 pages. Details of the content of the report are given in the Pet Rock Writing Guidelines that were distributed. Some of this information will require that the

student read professional papers from the literature, and evaluate the results of these papers as they pertain to her/his study. During the semester we will be discussing literature resources. The 10 minute oral presentation will be a presentation using PowerPoint® and it will be meant to convey the purpose of each study, the results and the conclusions to his/her study. This preliminary submission of material is meant to allow each student to make revisions based on the feedback from Dr. Henry, and will not be graded.

Early December (last Friday of classes) - ***Igneous and Metamorphic Petrology Symposium Day.*** *15 minute oral presentation of pet rock report and submission of the 10 page revised pet rock report to Dr. Henry.*

Each student team will give a 10-12 minute PowerPoint® presentation with 2 minutes left for questions and answers. The Igneous and Metamorphic Petrology Symposium will be conducted as if it were at a professional meeting, with the students dressing and conducting themselves accordingly. The Symposium will be advertised and open to the public. The oral presentation should be revised in accordance with earlier discussions with Dr. Henry and Colleen Fava of the BASC CxC lab. Each presentation will be evaluated by Dr. Henry, the TA and each of the other students with evaluation forms that consider a variety of aspects of the presentation.

Each student will also submit the revised 10 page report to Dr. Henry.