

## Project Development

### A. Project Description

I intend to include a short geochemistry project in my chemistry courses (grades 10-12) and possibly my advanced chemistry course (grades 11-12) courses. I believe that I can use some aspects of the local geology of Iowa to introduce and reinforce several chemistry standards, including molecular and crystal structures, chemical formulas, and the real world and economic uses of various chemical compounds

### B. Project objectives

- i) This project will provide high school students with an opportunity to explore local rocks and minerals and consider their origin and importance.
- ii) This project will allow students to model the crystal structures of various minerals that occur locally, and to directly relate the modeling experience to rock and mineral specimens they personally collect.
- iii) This project will help students make connections between the molecular world of chemistry and the world of their experience.

### C. Implementation statement

Chemistry students will spend about 1 class period and possibly out of class time collecting a few rocks around the school campus, the local community, and their homes. On the second class day, students will break into small groups and identify their specimens using standard rock and mineral keys. Each group will be directed to choose three minerals present in their collected specimens and research the chemical formula and crystal structure. The modeling project will require each group to create a model of the crystal structure of their minerals (using materials of their choice). The crystal structure models along with samples of the rocks/minerals they represent will be displayed in the classroom along with the chemical formula and several facts about each mineral. As a class, we will discuss the importance of these various minerals on Iowa's landscape and economy.

### D. Project Evaluation

Student groups and individuals will be assessed on whether their models reflected the true crystal structure of the mineral, indicated the various elements incorporated in the molecule, and their participation in the class activities and discussions. This project may be part of a larger unit on molecular structure and chemical compounds.