

Ammonia, Methane, Water

Summary

Students will compare the shapes of the ammonia, methane, and water molecules.

Time Frame

1 class periods of 30 minutes each

Group Size

Individual

Materials

The [information sheet](#) for the students is attached. Have a designated area for the students to bring their projects because they are often too big for the room. Putting signs on tables with the period number in the back of the room is helpful. This makes it easier for the students to find it when they present their projects,

Background for Teachers

Time Needed:

This is given mostly as a homework assignment but a few minutes can be given to let the students bring in materials and work or prepare their project. Plan about ten minutes to introduce the assignment and some time to let the students presents their projects to the class (depending on class size).

Student Prior Knowledge

This assignment can be used as an assessment or review for the students. They should know how covalent compounds form bonds and how to draw them. The students should also know how to draw the three dimensional structures of the water, methane, and ammonia molecules.

Instructional Procedures

Give the students a couple minutes to speed read over the assignment. Afterwards, give some time to the students to ask questions. If you have an example of a similar project to show the students, they always do better if they have a visual.

Give them 20 minutes the next day in class to prepare their projects. Even if they are doing power point, they can work on the organization of the assignment.

On the due date, let them present their projects. Have them tell the class what they especially like/learned on/doing their project.

Assessment Plan

Scoring Guide:

While the students present their projects, use the list below and grade their projects. Make sure the students point out the 2-d structures, 3-D shapes, and 3-D geometries along with the names of the molecules.

Show the 2-dimensional (using just bonds and electron dots) structures of water, ammonia, and methane.

Show the 3-D molecular shapes of water, ammonia, and methane.

Show the 3-D molecular geometries of water, ammonia, and methane. Label the geometries with their corresponding names of bent, trigonal pyramid, and tetrahedral.

Label the important and major characteristics of water, ammonia, and methane. Don't forget to talk about their polarities as one of the major characteristics.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)