

Modeling Bonding Activity:

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Teacher's Guide

Goals

- To teach about atomic bonding
- To facilitate the understanding of bonding by interactive models

The Activity

Different methods are used to model bonding between atoms. These methods challenge various skills of the students in order to give them a deeper understanding.

Lecture Notes

Examples of Questions:

Why are there eight electrons in the oxygen atom?

Where are these electrons located?

How are the spins of the electrons organized?

How many electrons are there in the electron shell?

How many bonding/non-bonding electrons are there?

Teaching Tips From Mr. Pratuch

In teaching bonding, use three things:

1. **Marbles for the hands-on:** Call up students and let them actually build the atom with the marbles.
2. **The computer for the visual:** The software walks the students carefully through the notion of charges on the atom, what is truly happening on that level.
3. **Formula Rummy:** A card game for verbal interaction between students. It generates things that you can use. One can talk about how an ion is used up in the formula and the ratio between the ions.

In the game, students pick up cards with different positive/negative ions and match the charges. Then they try to find a multiplier. Thus they learn about the stoichiometry of bonding.

Try to make links between two things: the structure of the atom, and the resulting compounds, the molecules you get out of them.

The focus is on why we are looking for data, where we get the numbers from, and what it means.

References: Links

<http://web.jjay.cuny.edu/~acarpi/NSC/5-bonds.htm>

A tutorial on chemical bonding using Lewis dot structures.