

MODELING CHEMICAL BONDING AND MOLECULAR STRUCTURE ALLOW FOR IMAGINATION AND CREATIVITY IN THE CLASSROOM

WHAT ARE CHEMICAL BONDS AND MOLECULAR STRUCTURES?

- Chemical bonds are the interactions between atoms or even between molecules to form the bases of many different structures and substances we see today.
- These interactions occur between the electrons and nuclei of certain atoms. A bond is formed when it lowers the energy of system and forms a more stable structure.
- Depending on the type of bond formed whether it's covalent, ionic, or intermolecular it changes how the molecule will form its stable structure.
- Depending on how many bonds an atom forms with other atoms can also have a impact on the shape of the overall structure.
- Intermolecular interactions also show what structures or shapes that molecules will make with each other as well.

NATURE OF SCIENCE CONNECTION

- Chemists and other scientist use a number of different ways to show chemical bonding and molecular structure.
- They use physical models made from balls and sticks or they may even use drawings with letters and lines. These ways of showing chemical bonding use creativity and imagination.
- They are tools to help mentally visualize how atoms may interact with each other to form molecules. They can also show how different bonding works.
- The use of these models explores on how sometimes you have to use your imagination or creativity to show how a phenomenon that can't actually be seen.
- Even if these tools aren't exactly what happens with chemical bonding and molecular structure, it gives a general idea.

WHY IT MATTERS?

- It matters because many people associate science with just facts, but when it comes to solving problems there can be a lot of creativity and imagination involved.
- Especially when it comes to looking at problems that are harder to see or understand without the help of some tools like models and drawings.

LEARNING USE

- This case card could be used as a discussion prompt on finding other ways to show topics that are hard to see without a visual model.
- Even discuss what types of materials could be used to show these concepts or look into how Artificial Intelligence could be used to visually explore concepts.

EXamples of types of molecular kits used

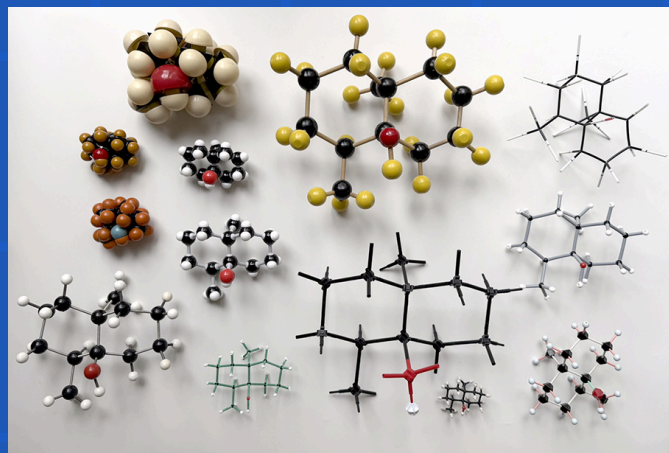


Photo source: http://www.microscopy-uk.org.uk/mag/indexmag.html?http://www.microscopy-uk.org.uk/mag/z_sep25/dw-models-geosmin.html

Different ways molecules can be drawn out

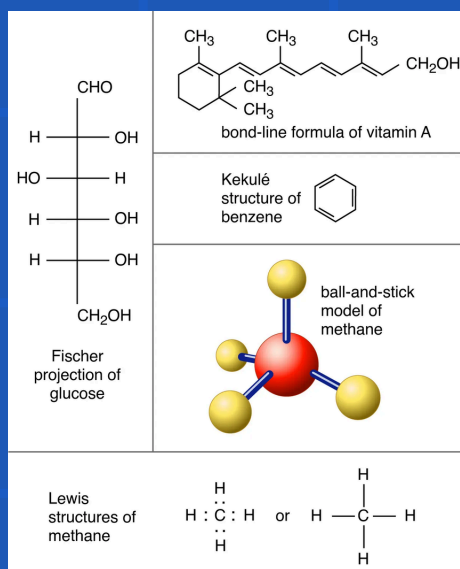


Photo source: <https://www.britannica.com/science/molecule>

References:

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