The Not-so-big-Big Picture! DRAFT#1 11/13/02

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Objective:

To help students visualize and understand intermolecular forces.

Target student audience: YR.1, First year chemistry

ChemSense User Tools: BEGINNING--INTERMEDIATE

ChemSense Tools used: DRAWING and ANIMATION

Specialized Tools needed: NA

Classroom Implementation

Time: 75 minutes

Student Grouping: pairs

Activity Type: Drawing and animation

Chemistry Concepts in Activity (linked to CA stds & ChemSense 5 themes):

AUHSD

Standard 1C4—Knows the states of matter depend on molecular motion ionization energy, electronegativity, and the relative size of ions and atoms.

Standard 1C5—Knows that in solids the atoms are closely locked in position and can only vibrate; in liquids the atoms and molecules are more loosely connected and can collide with and move past one another; and in gases the atoms and molecules are free to move independently, colliding frequently.

Standard 3C1—Knows atoms combine to form molecules by sharing electrons to form covalent or metallic bonds or by exchanging electrons to form ionic bonds

Standard 3C2—Knows chemical bonds between atoms in molecules.

Standard 3C3—Knows salt crystals, such as NaCl, are repeating patterns of positive and negative ions held together by electrostatic attraction

Standard 3C4—Knows that atoms and molecules in liquids move in a random pattern relative to one another because the intermolecular forces are too weak to hold the atoms or molecules in a solid form.

Standard 3C6—Knows how to draw Lewis dot structures

Pre-requisite Chemistry Concepts: Students should be able to know the difference between ionic and covalent compounds. In addition, they should be able to draw correct Lewis Dot Diagram, apply VSEPR, consider the polarity of bonds based on electronegativity values, and then apply that to identify intermolecular forces between molecules.

ACTIVITY Summary: Students will work on a drawing of an ionic compound and be introduced for the first time to the animation tool. They will use this tool to demonstrate their understanding of the three main types of intermolecular forces that exist between molecules.

Sources: NA

Application:

Understanding the composition of matter at the molecular level and their intermolecular forces will enhance their understanding of many physical and life processes.