

## Krug Chemistry – Deep Run Daily Planning Guide

Date of Lesson: Q2 Day 17 – Intermolecular Forces (IMFs) and Polarity Lab Extravaganza

<b>Topic /Big Questions:</b> ( <a href="#">Question Stems</a> & <a href="#">Question Creation Chart</a> )	
<ul style="list-style-type: none"> <li>• What type of forces hold molecules together as solids, liquids, or gases?</li> <li>• How do polar and nonpolar molecules behave in nature?</li> <li>• How does polarity affect intermolecular forces?</li> </ul>	
<a href="#">State SOL</a>  CH 6	<b>Unpacking the Standards</b> ( <a href="#">Video explanation shown at 3:18</a> )  CH.6 The student will investigate and understand that the phases of matter are explained by the Kinetic Molecular Theory. Key ideas include <ul style="list-style-type: none"> <li>a) pressure and temperature define the phase of a substance;</li> <li>b) properties of ideal gases are described by gas laws; and</li> <li>c) <b>intermolecular forces affect physical properties.</b></li> </ul>
<b>Visible Learning (For the three items with asterisks*, think from a student perspective. Use simple language)</b>	
<b>*What am I learning today?</b> Compounds and molecules are held together by intermolecular forces. The type of force depends on the level of polarity. The movement of atoms and the relationship of energy and the phases is outlined in the Kinetic Molecular Theory.	
<b>*Why is it important?</b> The Kinetic Molecular Theory explains the behavior of matter. Polar molecules will not mix with nonpolar molecules. Likes attract likes – polar with polar and nonpolar with nonpolar.	
<b>*How will I know I've learned it?</b> I will identify and understand the requirements for classifying each type of intermolecular force. I will identify the type of forces seen based on the behavior of each substance and the known molecular shape.	
<b><a href="#">Differentiation strategies:</a></b>  <b>Lab Extravaganza – IMF &amp; Polarity Labs</b> <ul style="list-style-type: none"> <li>• Pre-Lab Reading document</li> <li>• Station Instructions</li> <li>• CER Notebook Rules</li> <li>• Post Lab Inquiry Questions</li> </ul>	
<b>Accommodations and/or modifications are being met for students with IEP's/504's.</b>  Small group activities; frequent checks for understanding; materials available on Schoology	

### Daily Plan/Sequence of Instruction:

Teacher will recommend students read the **Pre-Lab Reading** document posted to Schoology. This document lists the chemical names, formulas, and molecular structures for each compound or molecule used in the lab. It also explains the polarity level of each molecule. Teacher will use the **Station Instructions** to set up the following stations before class begins:

1. **Forces of Nature** – reveals water is polar and turpentine is nonpolar
2. **Tangled Polymers** – reveals cornstarch mixed with water acts like a solid when pressure is applied
3. **Polarity Races** – reveals that nonpolar liquids are attracted to nonpolar solids
4. **A Hole in One** – reveals that surfactants overcome intermolecular forces; pepper is nonpolar; water is polar
5. **Tie Dyed Milk** – reveals that surfactants overcome intermolecular forces; dye is polar; milk fat is nonpolar
6. **Electric Slide** – inducing charges causes likes to repel
7. **Hop to It** – inducing charges causes opposites to attract
8. **Love is not a Mystery** – the polarity of a solid determines which liquid it will bond to
9. **The Solution is Obvious** – likes dissolve likes

Students will be sorted into small groups. Each group will rotate through the stations every 5 – 7 minutes. Students will record sketches and **Claim, Evidence, Reason** in their lab notebooks based on what they observed. (They won't necessarily have time to sketch during the lab, so tell them to leave room in their notebooks to sketch later. Pictures from each station can be posted to Schoology after the lab to help with sketching after the lab is over.) Encourage the groups to clean up and reset the station for the next group. Once the lab is over, students will complete the Post Lab Questions to review what they learned and investigate further.

**Assessments (List all [formative](#)/[summative](#) assessments used to check for understanding during this lesson. Summative assessments may occur during a different class period.):**

Lab Extravaganza CER Notebook – (formative)

Lab Extravaganza Post Lab Questions – (summative)

After assessing today's lesson are you and your students comfortable moving forward with your next objective?

**Yes** – students participated in lab activities, took detailed CER notes, and scored 80% or higher on the post lab questions

**No**, remediation required to proceed – if students do not participate and earn a failing score on the post lab questions, teacher will contact their parents and offer assistance during One Lunch; students may do corrections for up to a 65% passing score.