ionic vs. Covalent Bonds

Topic: Bonding

Guiding Question: How are ionic and covalent bonds different from each other? What properties do these types of bonds determine?

Hypothesis: How do you predict ionic bonds will differ from covalent bonds in their:

Appearance, ability to conduct electricity, melting point, and ability to dissolve in water?

Observations:



- 1.) Determine which of the above substances are ionic or covalent.
- 2.) Make 5 observations on the differences in appearance between ionic and covalent bonds.

Melting Sugar vs. Salt:

Watch this video: https://www.youtube.com/watch?v=E_q6OC1quSk

Substance	Ionic or Covalent	Time to Melt	Observations
Sugar			
Salt			

1.) Which substance melts faster? Based on this, what type of bond do you think is stronger? Give claim, evidence and reasoning.

Conductivity:

Visit:

https://phet.colorado.edu/sims/cheerpj/sugar-and-salt-solutions/latest/sugar-and-salt-solutions.html?simulation=sugar-and-salt-solutions

Click on "Micro" at top left of screen.

Substance	Ionic or Covalent	Metal Present?	Dissociates? (Do the atoms separate in water?)	Conducts Electricity?
Sugar/Sucrose				
Salt				

1.) Write your observations in 3-5 sentences. Explain which types of bonds conduct electricity and explain why you think they might.

Data Collection:

Substance	Phase at Room Temp (Solid, Liquid or Gas)	Melting Point (high or low)	Solubility (Does it dissolve in water?)	Does it conduct electricity?	Type of bond (ionic or covalent)
Water (H ₂ O)			n/a		
Salt (NaCl)					
Oil (C ₂ H ₅ OH)					
Sugar $(C_{12}H_{22}O_6)$					
Potassium lodide (KI)					

Post-Lab:

- 1.) Write a 1-2 paragraph explanation of ionic compounds. Use what you have observed in lab to prove your claims. Be sure to discuss each lab as evidence.
- 2.) Write a 1-2 paragraph explanation of covalent compounds. Use what you have observed in lab to prove your claims. Be sure to discuss each lab as evidence.