

Student Directions for *Slightly Soluble Salts 2*: Introduction to solubility

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Learning Goals: Students will be able to:

- Write the dissolving reaction for salts
- Describe a saturated solution microscopically and macroscopically with supporting illustrations
- Calculate solubility in grams/100ml
- Distinguish between soluble salts and slightly soluble salts macroscopically.

1. Write the dissolving reaction for sodium chloride and predict what you should see when you add the salt to the water in the simulation.

- Use *Slightly Soluble Salts* to test your ideas about the dissolving process.
- Write a summary of how dissolving can be modeled and include illustrations.
- Test your ideas with the other 6 salts in the simulations, and then write the dissolving reactions.

2. A general definition of a saturated solution is: A solution in which the maximum amount of substance has been dissolved in another substance.

- If you were dissolving table salt in a beaker of water, what would a saturated solution look like?
- Use the simulation to see what a saturated solution looks like on a microscopic level. Talk about how you know the solution is saturated and check with Ms. Loeblein to see if your reasoning is correct.
- Write a description of a saturated **salt** solution microscopically and macroscopically, and support your ideas with drawings.

3. The ratio of the maximum amount of the substance per volume of solvent at saturation is the solubility. For example, the solubility of sugar is 203g/100ml of water at 20°C.

- Design an experiment using *Slightly Soluble Salts* to determine the solubility in g/100ml that includes varying the water volume.
- Use your design to find the solubility of the seven salts. Make a data table with results and show samples for the necessary calculations.
- Which salt gave you the best data? Explain why you think the data is “best” and why you think that salt gave good results.
- Which salt gave you the poorest data? What makes the results poor and explain why the results may be poor

4. Sodium chloride is considered soluble and the other salts are slightly soluble.

- Draw a beaker with 100 ml of water. Then draw how much a **soluble salt** like sodium chloride would dissolve. Explain the reasoning you used to decide how much salt to draw.
- Draw another beaker with 100 ml of water and draw how much a **slightly soluble salt** like silver bromide would dissolve. Explain the reasoning you used to decide how much salt to draw.