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(#4-2c)

Solution Concentration

1. What factors could a person change in order to make a liquid a solid or a gas?

a) Temp b) Pressure

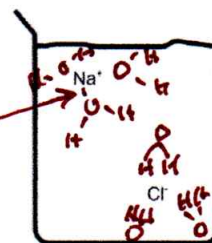
2. Answer the following questions relative to solubility of the beaker →

a. There is 1 example water molecule to the right, add 6 of these to the picture showing correct position to facilitate dissolving?

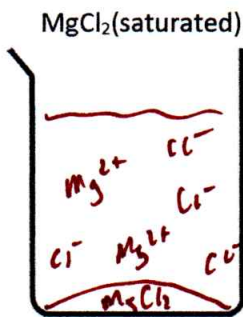
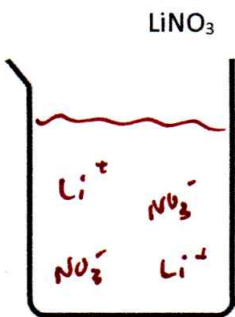
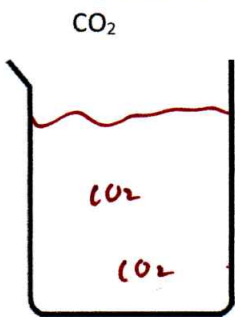
b. What force is causing these to dissolve in water?

Ion-dipole

c. Label this force on the picture.



3. Draw a picture in the beakers below of 2 dissolving particles.



4. What is the difference between each substance dissolving relative to bond type?

Covalent

Ionic

5. How many Cl⁻ ions are floating around in the solution? (lost Beaker)

4

6. How many Cl⁻ ions would be floating around if 100 MgCl₂ particles were dissolved?

200

7. 50 grams of MgCl₂ dissolved in 50mL of water

$$50g \cdot \frac{1 \text{ mol}}{95.2 \text{ g}} = \boxed{0.52 \text{ mol}}$$

a. How many moles of MgCl₂ are present?

b. How many moles of Cl⁻ ions are present?

$$0.52 \cdot \frac{2 \text{ Cl}^-}{1 \text{ MgCl}_2} = 1.04 \text{ mol Cl}^-$$

c. What is the concentration (M) of the MgCl₂

$$0.52 / .05L = \boxed{10.5 \text{ M}}$$

d. What is the concentration (M) of Cl⁻ ions?

$$1.04 / .05L = \underline{21 \text{ M}}$$

8. A person adds another 50mL of pure water to the beaker in Question 7?

a. By what factor was the volume increased? x 2

b. What is the new concentration of the MgCl₂?

$$0.52 / .1 = 5.25 \text{ (} \frac{1}{2} \text{ original)}$$

9. A beaker of 50mL 0.5M Mg₃(PO₄)₂ The concentration of Mg²⁺ = 1.5M PO₄⁻³ = 1.0M

10. Additional 50mL of water is added to the solution

$$\text{Mg}^{2+} = \underline{0.75} \text{ PO}_4^{-3} = \underline{0.5}$$

$\frac{1}{2}$ $\frac{1}{2}$

*original
beaker
volume*