




Concentration PhET Weblab Part 2 – Use HTML 5

https://phet.colorado.edu/sims/html/concentration/latest/concentration_en.html

Part 2: Saturation - Procedure

1. Drain the tank. Choose the dropper solution for Cobalt (II) Nitrate  and fill the tank to 0.50 L (L).
The solution is almost saturated. Add a little bit more solid solute with the shaker  until you reach the saturation for Cobalt (II) Nitrate. In Data Table 2, record the “Concentration at Saturation Point (mol/L or M)”.
2. Shake in extra solute until you see the solid particles settling on the bottom and answer Part 2- Question #1.
3. Click  and repeat with each solute using 0.50 L (1/2 L) every time skipping the Drink Mix.








Part 2-Analysis:

1. Calculate the moles of solute required to saturate the solution using the molarity formula and record your result in Analysis Table 2. Show work for Cobalt(II) Nitrate only below:

$$\text{mol} = (\text{molarity}) \times (\text{vol of soln})$$

$$\text{mol} = (5.64\text{M}) \times (0.50\text{L}) = 2.8\text{mols}$$
2. Calculate the grams of solute required to saturate the solution using the molar mass and record your results in Analysis Table 2. Show work for Cobalt (II) Nitrate below & answer Part 2 - Questions # 2.

$$\frac{2.8\text{mol Co(NO}_3)_2}{1\text{mol Co(NO}_3)_2} \times 182.95\text{g Co(NO}_3)_2 = 510\text{g Co(NO}_3)_2$$

DATA TABLE 2		ANALYSIS TABLE 2	
Solute	Concentration at Saturation Point (mol/L or M)	Moles required to saturate solution (mol)	Grams required to saturate solution (g)
 Cobalt (II) nitrate	5.640	2.8	510
 Cobalt chloride	4.320	4.3	560
 Potassium dichromate	0.510	0.26	76
 Potassium chromate	3.360	1.7	380
 Nickel (II) chloride	5.210	2.6	340
 Copper sulfate	1.380	0.69	110
 Potassium permanganate	0.480	0.24	38

Concentration PhET Weblab Part 2 – Use HTML 5

https://phet.colorado.edu/sims/html/concentration/latest/concentration_en.html

Part 2-Questions: Explain Using Complete Sentences

1. Once the solution saturated, the added solid solute does not dissociate. What does the excess do?

The excess settles on the bottom

2. Using 0.50 L of solution each time, does the solubility of the solutes seem similar?

The solubilities are different because it's a unique characteristic of the solute.

3. How could you “supersaturate” these solutions, exceeding the amount of dissolved solute possible for a given volume of solvent by preventing formula units from precipitating into crystals?

Heat while almost saturated then saturate and cool slowly.