

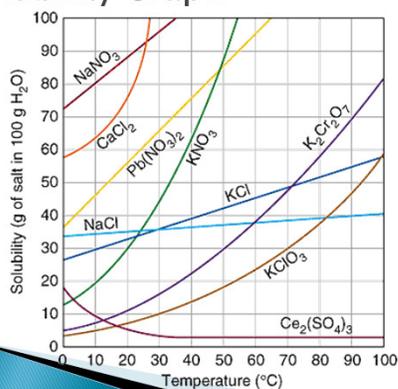
## Solubility

Mr. Sudbury

## Solubility

- ▶ The **solubility** of a substance is the amount of that substance required to form a **saturated solution** with a specific amount of solvent at specific temperatures.
- ▶ It tells you how much of something you can dissolve in 100g of solvent at a given temperature.
- ▶ The solubility describes the relationship between the solute and solvent.
- ▶ Solubility changes according to the temperature.

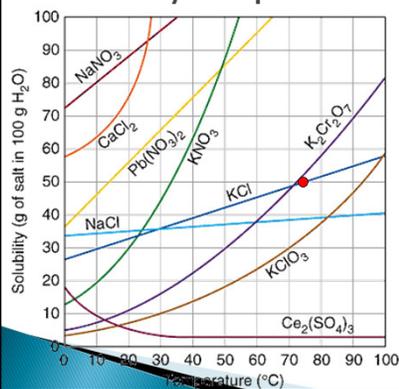
## Solubility Graph



## Solubility

- ▶ A **saturated** solution has the maximum amount of dissolved solute. If any more solute is added it will not dissolve.
- ▶ An **unsaturated** solution can still dissolve more solute at the given temperature.
- ▶ A **supersaturated** solution has more solute dissolved than should be possible at that temperature.

## Solubility Graph

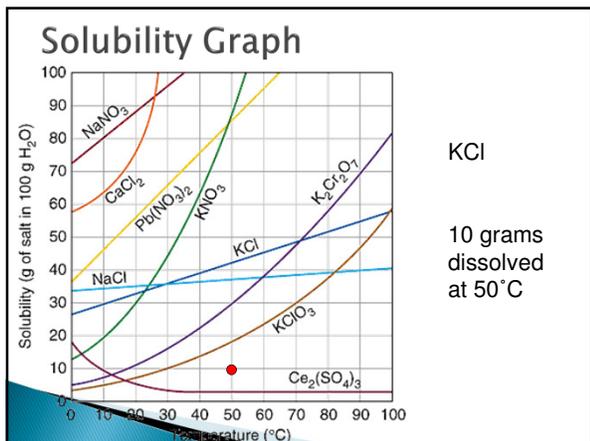


KCl

50 grams  
dissolved  
at 75°C

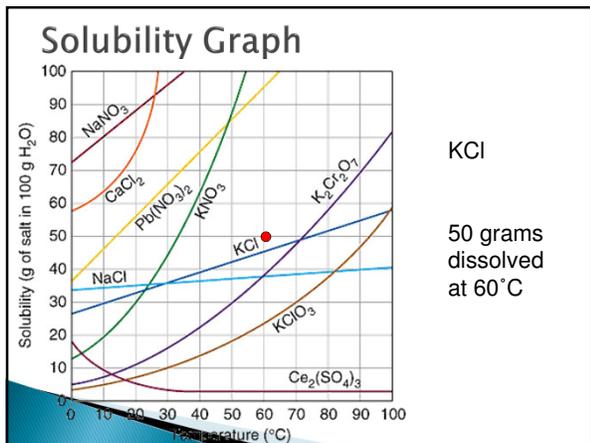
## Solubility

- ▶ A **saturated** solution is on the curve.



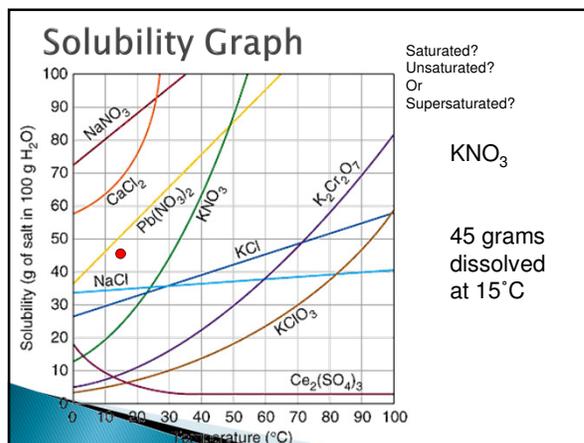
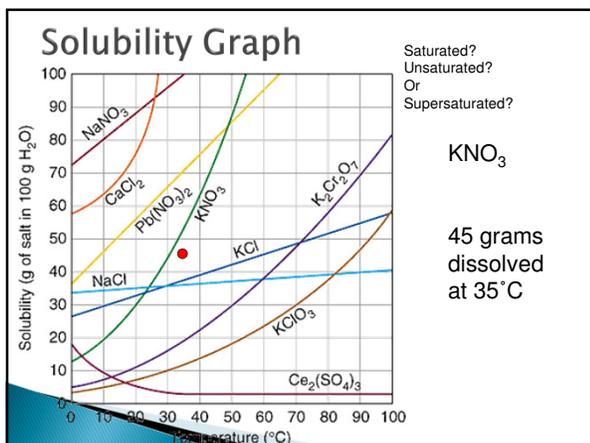
### Solubility

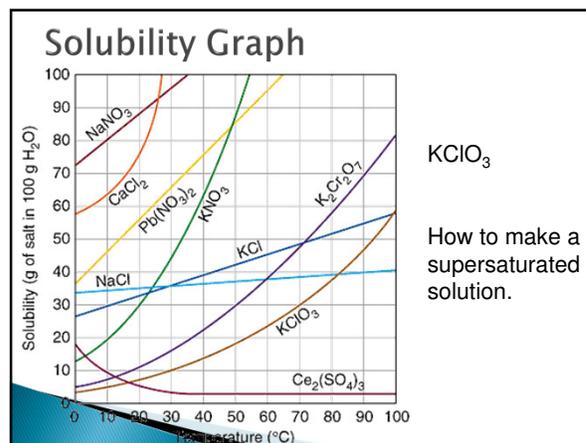
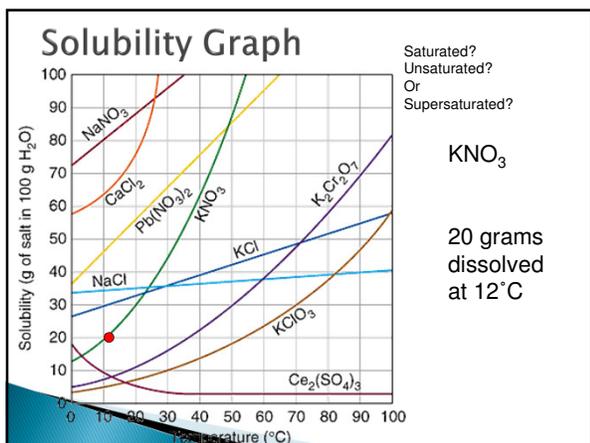
- ▶ An **unsaturated** solution is below the curve.



### Solubility

- ▶ A **supersaturated** solution is above the curve.





### How to make a supersaturated soln.

1. Heat the solvent.
2. Add the solute to make it a saturated solution.
3. Cool it off.
4. It is now supersaturated at the cooler temperature.

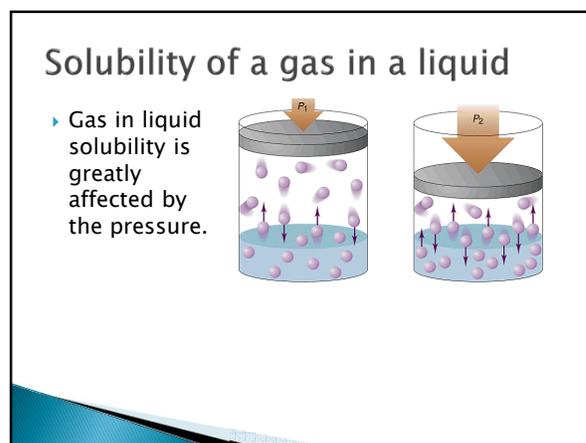
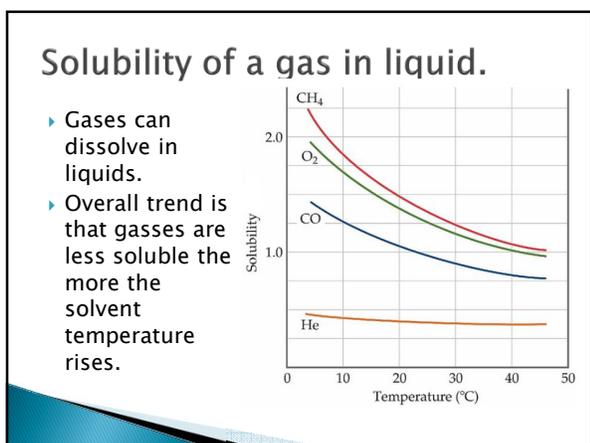
Supersaturated solutions are very unstable.

The extra solute that is dissolved with recrystallize almost instantly is the supersaturated solution is disturbed.

Sodium acetate

### Solubility Trends

- ▶ Solid solute in liquid solvent.
- ▶ Most of the time solubility INCREASES with temperature.
- ▶ Remember the factors that affect the rate a solution forms:
  - \*particle size (surface area)
  - \*stirring the solution
  - \*heating the solution



The End

