

Solubility Reactions

objectives

(#4-2) How do chemicals undergo a solubility reaction?

(#4-2a) A student shall be able to identify if a reaction is a solubility reaction?

(#4-2b) Students should be able to write molecular, ionic and
net ionic equations for solubility reactions.

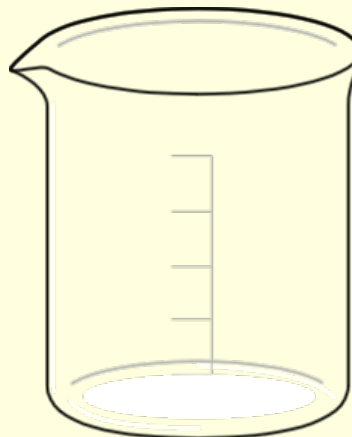
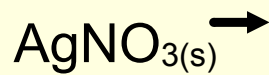
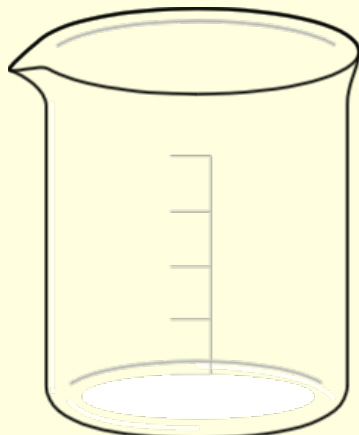
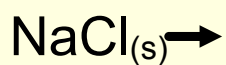
(#4-2c) Students shall be able to model the solubility reactions.

(#4-2d) Students can predict the products of solubility reactions.

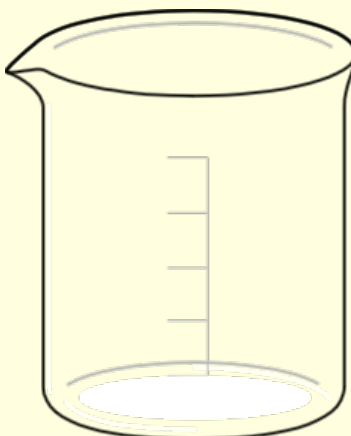
Solubility Reactions

Types

1. Precipitation (create insoluble solid)
2. Neutralization Reactions (acid/base, insoluble water as liquid)



+



different combinations of ions have different solubilities

Solubility--Predicting products

How do you predict the products?
look at ions and switch partners



check out "other" combinations for solubility
aqueous (aq) -- soluble (ions)

solid (s) -- insoluble

liquid (l) -- insoluble HOH (l)

sodium carbonate and barium nitrate:

big idea:

different combinations of ions have different solubilities

What "drives" a reaction?

in order to have a reaction, need insoluble product

-forms at least one precipitate (s) (can have 2)

or

-forms HOH(l) which is insoluble --in neutralization rxn

solubility: check solubility chart

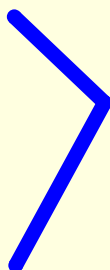
quick check-first

Na⁺¹

K⁺¹

NO₃⁻¹

NH₄⁺¹



always soluble

use solubility chart: (aq) or (s) ? H₂O is (l)

try these:

KNO₃

NH₄OH

Ba(OH)₂

PbCl₂

BaS

NaCl

MgS

H₂O

PbSO₄

PbBr₄

Fe(C₂H₃O₂)₂

Al₂S₃

big idea:

different combinations of ions have different solubilities

Molecular, ionic, and net ionic equations

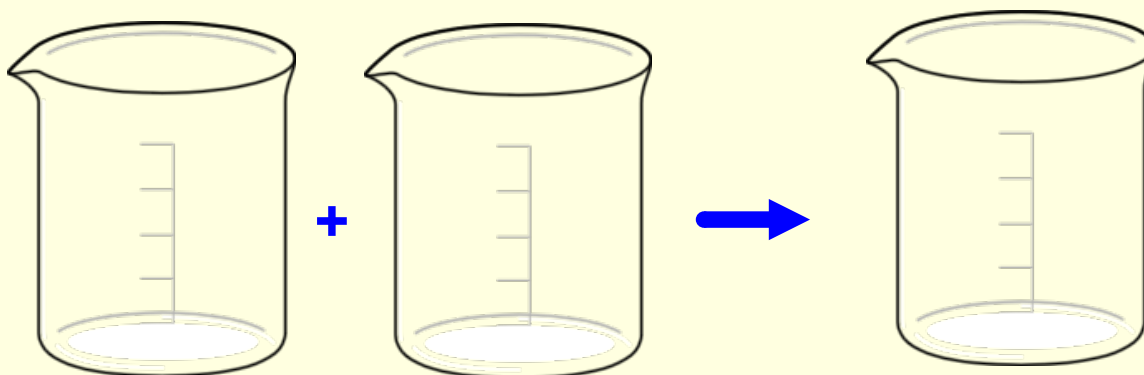
molecular: $\text{AgNO}_3(\text{aq}) + \text{NaCl}(\text{aq})$

ionic:

all (aq) are dissociated

net ionic:

(remove spectator ions)

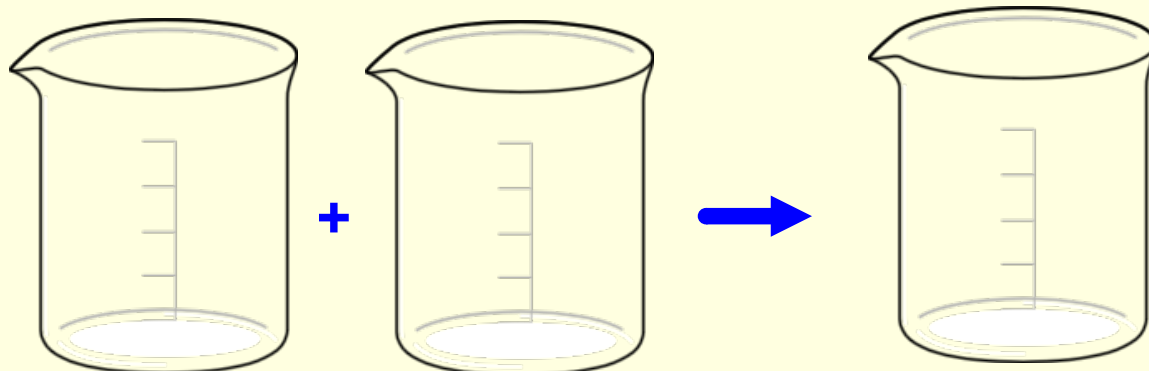


ammonium nitrate + sodium chloride

molecular:

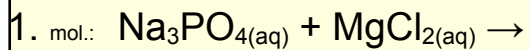
ionic:

net ionic:



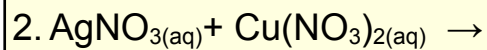
if all aqueous.... no rxn

Practice:



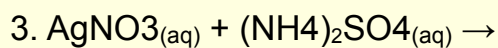
Ionic:

net ionic:



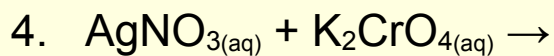
Ionic:

net ionic:



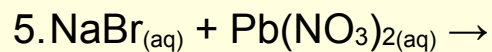
Ionic:

net ionic:



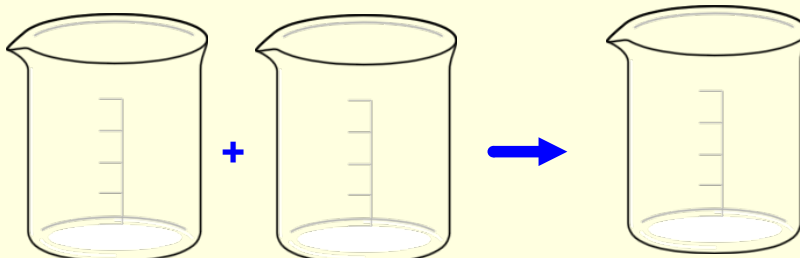
Ionic:

net ionic:



Ionic:

net ionic:



Solubility Reactions--

Neutralization reactions (acid base rxns):

reactants: acid cation: ____, base anion: ____

products: _____ () and salt (ionic substance)

