

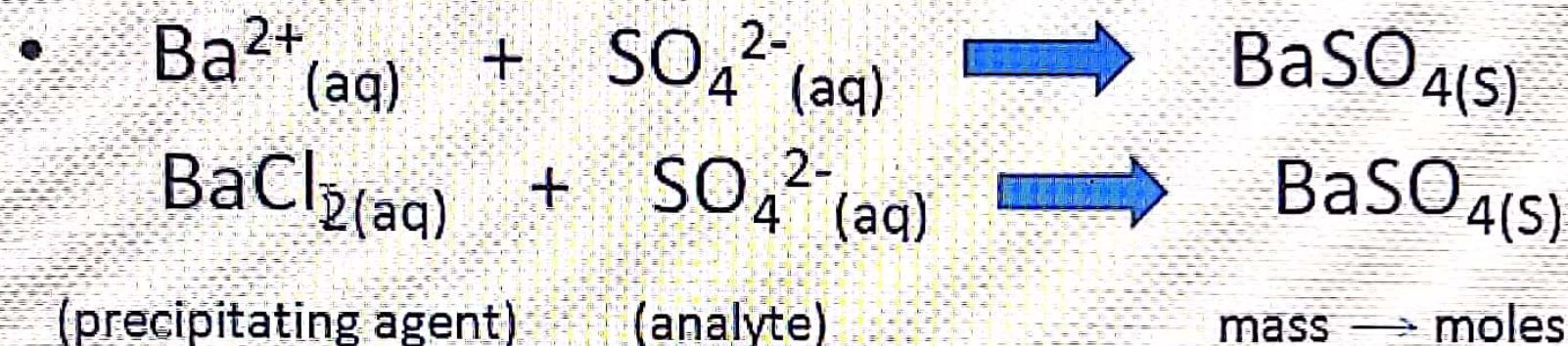
Experiment 9

Gravimetric determination of sulfate

- Aim of the experiment:

* Determination of sulfate ions concentration in an unknown solution by precipitation as barium sulfate BaSO_4 .

- Analyte: SO_4^{2-}
- Precipitating agent: BaCl_2



- This method is used when analyte is selectively converted into insoluble product.

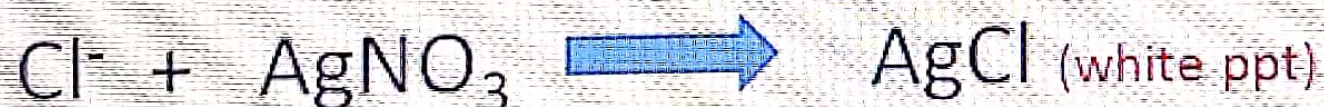
- Notes:

- The sulfate precipitation is carried out in a slightly acidic solution to decrease the rate of precipitation to get coarse particle (In basic media BaCl_2 will precipitate as Ba(OH)_2)
- Hot BaCl_2 solution is added quickly to sulfate solution to avoid coprecipitation (inclusion and occlusion)
- Digestion is necessary to get large particle size

****The test for complete precipitation of SO_4^{2-} is performed using precipitating agent BaCl_2 , no precipitate should appear**



- The precipitate on filter paper is washed by hot distilled water to remove Cl^- . then a test is performed using AgNO_3 , no precipitate should appear



- The filter paper should be charred without flaming to avoid reduction of BaSO₄



- Number of moles BaSO₄ = mass/molecular weight
= number of moles SO₄²⁻
- Mass SO₄²⁻ = number of moles SO₄²⁻ X Mw SO₄²⁻
- Conc mg/L = mass SO₄²⁻ x 1000 / 10 x 10⁻³