

PRECIPITATION TITRATIONS

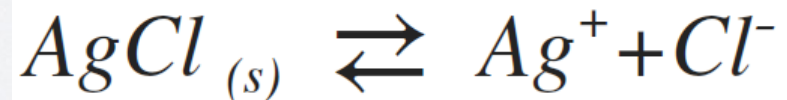
SDSU CHEM 251

PRECIPITATION TITRATIONS

- Precipitation reactions can be used to quantify the amount of an analyte in solution, so long as it is insoluble when combined with the titrant.
- Chloride ions can be quantified by titration with silver ions, through the formation of the insoluble product AgCl .
- Proper precipitation titrations can be highly accurate, so long as a suitable indicator can be found for the reaction.

PRECIPITATION EQUILIBRIA

- In precipitation reactions we frequently wish to quantify the amount of the analyte left in solution after a given amount of titrant has been added.
- The reactions are rapid and the formation of the insoluble products are favored, there is typically little dissolution of the precipitate once it has been formed.
- The extent of the reverse reaction can be quantified by the specific K_{sp} constant for the given analyte-titrant pair.



$$K_{sp} = [Ag^+][Cl^-]$$

TITRATION CALCULATIONS

- In performing the calculations for the amount of analyte and/or titrant free in solution during a precipitation titration there are three stages of the titration that must be considered:
 - Before the equivalence point.
 - At the equivalence point.
 - After the equivalence point.
- In all stages the proper stoichiometry for the reaction must be understood and used in all calculations.
- Some titrants can precipitate multiple analytes, much as with mixtures of acids, the analytes will precipitate in order of the least soluble to the most soluble.