

11.1: Prelude to Aqueous Phase Reactions

In other sections we emphasized the importance of liquid solutions as a medium for chemical reactions. Water is by far the most important liquid solvent, partly because it is plentiful and partly because of its unique properties. In your body, in other living systems, and in the outside environment a tremendous number of reactions take place in aqueous solutions. Consequently this section, as well as significant portions of many subsequent sections, will be devoted to developing an understanding of reactions which occur in water. Since ionic compounds and polar covalent compounds constitute the main classes which are appreciably soluble in water, reactions in aqueous solutions usually involve these types of substances.

There are three important classes of reactions which occur in aqueous solution: [precipitation reactions](#), [acid-base reactions](#), and [redox reactions](#).

- Precipitation reactions are useful for detecting the presence of various ions and for determining the concentrations of solutions.
- Acid-base reactions and redox reactions are similar in that something is being transferred from one species to another.
 - Acid-base reactions involve proton transfers, while redox reactions involve electron transfers.
 - Redox reactions are somewhat more complicated, though, because proton transfers and other bond-making and bond-breaking processes occur at the same time as electron transfer.

Below are demonstrations of each of the types of reactions we will be investigating throughout the course of this chapter.

The following video demonstrates precipitation reactions (carried out in an aqueous solution):



Next up is a demonstration of acids and bases reacting with Aluminum (in the form of a soda can):



Finally we have a video that shows a few demos of different redox reactions:



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