- Understand that acids and bases can be found everywhere
- Understand the logarithmic nature of the pH scale
- Calculate the pH of a strong acid or base

## **Techniques in Lab**

• pH meter

## **Theory**

## Acids and bases

A chemical species is an acid or base, depending on how it reacts in aqueous solution.

According to the **Brønsted-Lowry** definition, an acid (HA) is a species that donates a proton in aqueous solution. A base (B) is a species that accepts a proton in aqueous solution. Compare this with <u>Arrhenius definition</u> and <u>Lewis definition</u>.

The ability to accept or donate a proton depends on the structure of the molecule.

The protons (H <sup>+</sup>) donated by an acid complete with the mater molecules to form hydronium ions (H<sub>3</sub>O<sup>+</sup>). A base receives pool ons from water molecules. The water molecules then become hydroxide in SAN<sup>+</sup>).

These two different reactions (ccur because water is **amphoteric** - it can either donate or receive protons.

The <u>pH scale</u> represents how acidic or basic a substance is.

It is important to note that acids and bases, especially strong ones, can corrode metals and burn human skin.

## Importance of acids and bases

In our bodies, in our homes, and in our industrial society, <u>acids and bases</u> play key roles. Proteins, enzymes, blood, genetic material, and other components of living matter contain both acids and bases.

We seem to like the sour taste of acids; we add them to soft drinks, salad dressings, and spices. Many foods, including citrus fruits and some vegetables, contain acids.

We perceive bases as bitter and slippery. Therefore, foods with a <u>high pH</u> are not common.

