

Use of pH-meter  
(Cooper, p.1-16)

You can determine the pH of a solution by simply dipping a glass electrode into the solution and reading the pH value on the display of the pH-meter connected to the electrode.

However, in order for this value to be accurate, you need to use two standard buffers to calibrate the pH-meter readings (**2-point calibration**):

- (1) switch the pH-meter from “standby” to “pH”
- (2) rinse the electrode and place it in **pH 7** standard buffer and adjust the “**standardize**” button until the display reads 7.00
- (3) rinse the electrode and place it into **pH 4** standard buffer (if your solution is acidic) or into pH 9 standard buffer (if your solution is basic)
- (4) adjust the “**slope**” button on the pH meter until the display shows 4.00 or 9.00
- (5) rinse the electrode and place it into your solution

The glass bulb at the bottom of the electrode is a thin **glass membrane** which releases ions into the solution inside the bulb when protons dock to the outside of the glass membrane. This membrane should be completely submerged in your solution and not be in contact with the wall of your solution-container. It is also sensitive to mechanical disturbances and should therefore not be bounced off the bottom of your beaker or be hit by an out-of-control magnetic stirrbar.

The small fiber or ceramic “patch” above the glass bulb is a liquid junction which allows contact between your solution and the **reference electrode**. This “patch” must therefore also be submerged in your solution during measurements.

