Conductivity Meter

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Conductivity Meter

A conductivity meter (conductometer) is used to determine the conductivity of a solution.

It has a cap to protect the delicate electrode from impact.

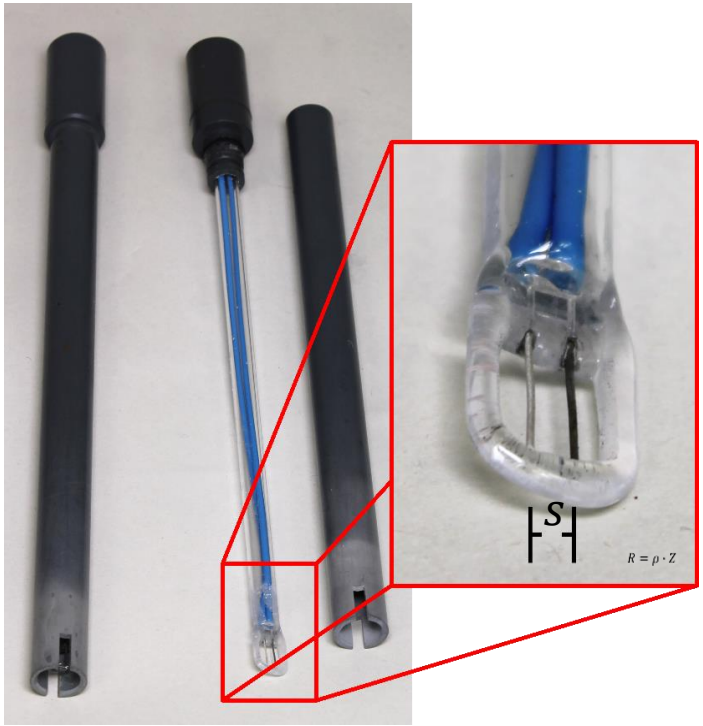
The electrical conductance G is a measure for the amount of dissolved and dissociated substance.

It is inverse proportional to the ohmic resistance R of the solution and is reported in siemens [S].

$$G = \frac{1}{R}$$

$$R = \rho \cdot Z$$

$$Z = \frac{s}{A}$$



The resistance R of the conducting electrolyte solution is dependent on the resistivity ρ (unit: siemens per meter [S/m]) and the cell constant Z.

The cell constant Z results from the distance s between the electrodes and the area of the electrodes A.

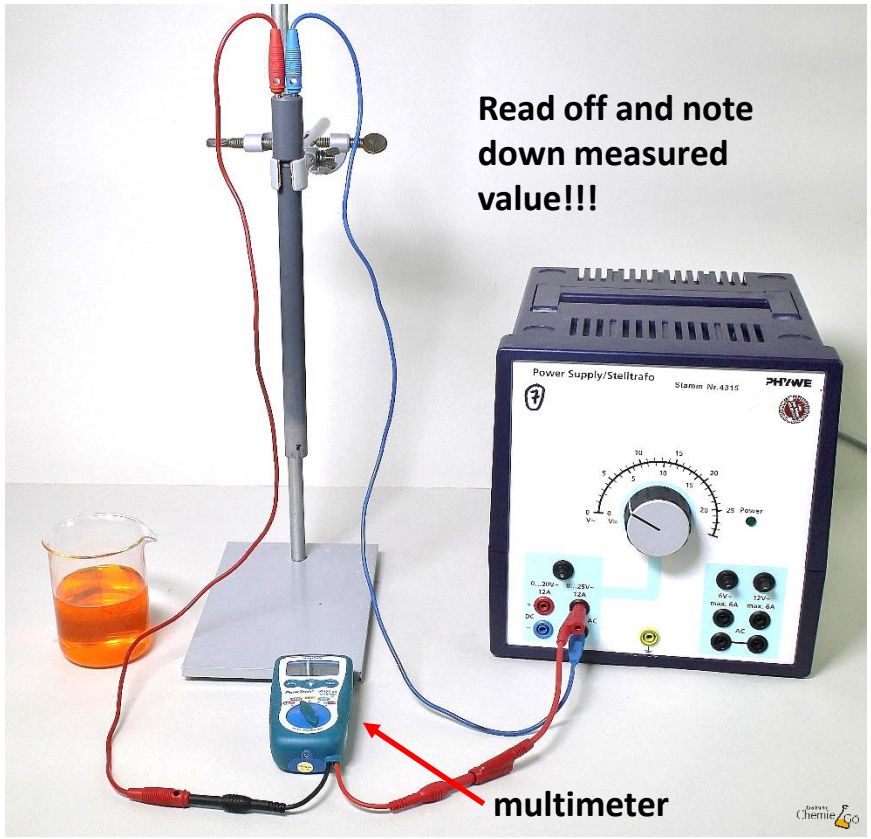
The value of the cell constant is provided by the manufacturer of the measuring cell or has to be determined by calibration.

$$G = \frac{I}{U}$$

In the practical courses, the conductivity *G* is mostly determined as the ratio of the measured current *I* and the applied high-frequency alternating voltage *U*.

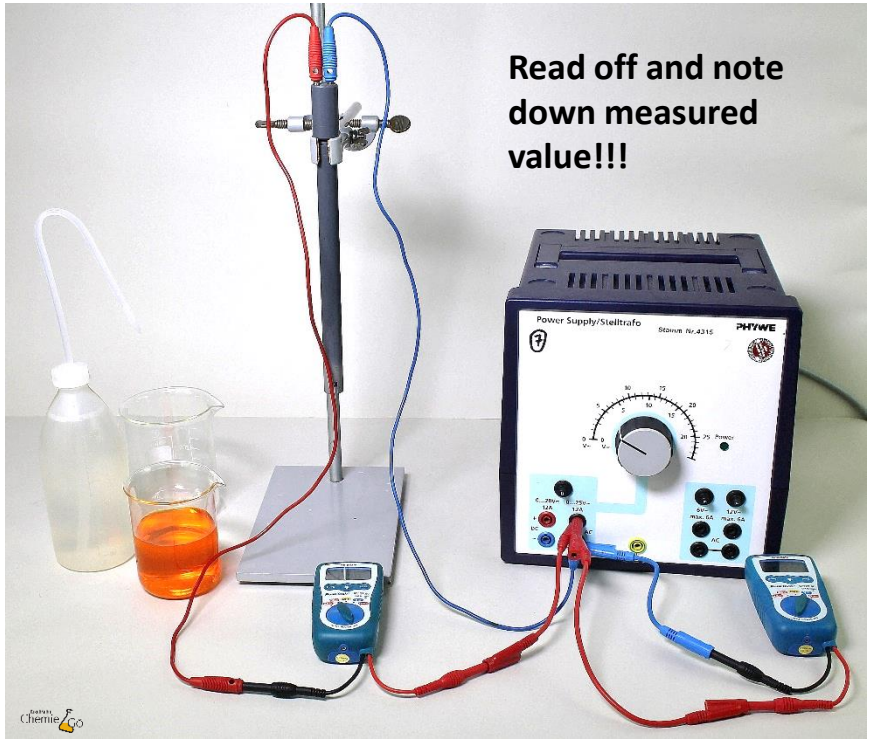
The resistivity and thus also the measured conductivity is dependent on:

- the concentration of the dissolved substance and its degree of dissociation.
- the valency and movility of the dissolved particles.
- the temperature of the solvent.



First, the power supply is connected to the conductivity meter.

The multimeter is connected to measure the current intensity.



A second multimeter is connected in parallel to measure the voltage.

The conductivity meter is immersed vertically into the solution and the measured value is noted down.

Subsequently, the conductivity meter is rinsed with purified water.