

In Part I of this experiment, metal/ion half-cell combinations will be tried. The Nernst Equation Theoretical predictions of tendency to gain electrons are used to predict the voltage difference between two electrodes. Under standard conditions (25 °C, 1 M solution concentration, 1 atm gas pressure), these theoretically predicted voltages are known as standard emfs (or E°_{cell}). From the data, a table will be developed, listing various elements and ions in order of their tendency to gain or lose electrons. The Nernst Equation allows cell voltages to be predicted when the conditions are not standard. Walter Nernst developed the following equation in the late 1800's while studying the thermodynamics of electrolyte solutions: