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Electrochemistry

Glossary

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| Anode | The electrode at which oxidation occurs |
| Cathode | The electrode at which reduction takes place |
| Daniell cell | An electrochemical cell in which the anode is the site of Zn metal oxidation, and the cathode is the site of Cu^{2+} ion reduction |
| Electrochemical cell | A cell within which a redox reaction takes place, containing two electrodes between which there is an electrical potential difference. See electrolytic cell; voltaic cell |
| Electrode | An electrical conductor through which an electric current enters or leaves a medium |
| Electrolysis | The process in which an electric current is passed through a solution, resulting in chemical changes that do not otherwise occur spontaneously |
| Electrolytic cell | An electrochemical cell that uses an external voltage source to drive a non-spontaneous redox reaction |
| Electromotive force (EMF) | The potential difference developed between the cathode and the anode of an electrochemical cell |
| Faraday (F) | The total charge on 1 mole of electrons ($1 \text{ F} = 96,487$ coulombs). Not to be confused with the farad (also denoted F), a unit of capacitance |
| Galvanic cell | An electrochemical cell that uses a spontaneous redox reaction to |

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| | do work, i.e., produce an electrical current. Also called a Voltaic cell |
| Half-reaction | Either the reduction half or oxidation half of a redox reaction. Each half-reaction occurs at one electrode of an electrochemical cell |
| Nernst equation | An equation that relates the voltage of an electrochemical cell to the concentrations of the reactant and products within that cell |
| Oxidation | A reaction involving the net loss of electrons or, equivalently, an increase in oxidation number |
| Oxidation number | The number assigned to an atom in an ion or molecule that denotes its real or hypothetical charge. Atoms, alone or in molecules, of standard state elements have oxidation numbers of zero. Also called the oxidation state |
| Oxidizing agent | In a redox reaction, a species that gains electrons and is thereby reduced |
| Redox reaction | A reaction combining reduction and oxidation processes. Also called oxidation-reduction reaction. |
| Reducing agent | In a redox reaction, a species that loses electrons and is thereby oxidized. |
| Reduction | A reaction involving the net gain of electrons or, equivalently, a decrease in oxidation number. |
| Standard conditions | Conditions defined as 25°C and 1 M concentration for each reactant in solution, and a partial pressure of 1 atm for each gaseous reactant. Used for measuring the standard Gibbs free energy, enthalpy, entropy, and cell EMF |
| Standard hydrogen electrode (SHE) | The electrode defined as having a potential of zero under standard conditions. All redox potentials are measured relative to the standard hydrogen electrode. The potentials are measured relative to the standard hydrogen electrode at 25°C and with 1.0 M of each ion in solution |
| Standard potential | The voltage associated with a half-reaction of a specific redox reaction. Generally tabulated as a reduction potential, compared to the SHE |

Voltaic cell

See Galvanic cell