Chemistry - Chapter 5: Galvanic Cells Cheat Sheet

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Galvanic Cells

- Devices that spontaneously convert chemical energy into electrical energy via redox reactions
- **G**alvanic **O**xidation at the **A**node is **N**egative
- **RED**uction occurs at the **CAT**hode (which is positive)
- Discharges & is spontaneous
- $^{-}$ve terminal **anode**
- $^{+}$ve terminal **cathode**
- 'S' shape formed on electrochemical series

Galvanic Cell Components

- Half cells	**Purpose Of Salt Bridge**
- Anode	- To keep each half cell neutral
- Cathode	- To complete the internal circuit
- Voltmeter with connecting wires	
- Salt bridge	
- Solutions	
- Electrodes	
- Electron movement	

Electrolytes

Acidic	**Alkaline**
- H^{+} ions	- OH^{-} ions

Primary Vs Secondary Cells

Primary Cells	**Secondary Cells**
- Can't be recharged	- Can be recharged
- Products slowly move away from electrodes or are consumed by side reactions, preventing rechargability	

Electrolytic Cells

- The **'reverse'** of galvanic cells
- Non-spontaneous, recharges via an electrical current that is slightly higher in voltage than the cell
- $^{+}$ve terminal **anode** (still undergoes oxidation)
- $^{-}$ve terminal **cathode** (still undergoes reduction)
- Electrical → chemical energy via electrolysis
- 'Z' shape on electrochemical series

Battery Life Shortage Causes

- Detached products from electrode within cell
- Unwanted side reactions due to other formed chemicals
- Cell material (including electrodes) impurities
- Corrosion
- Failure of internal components

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