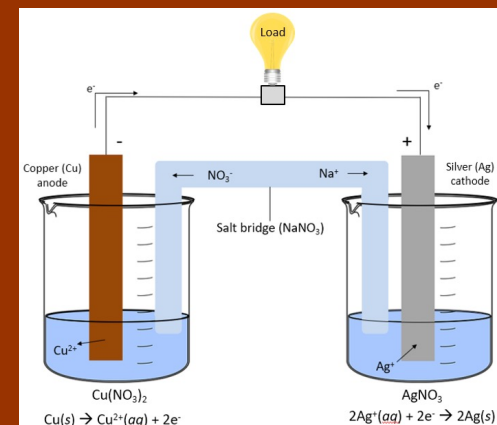
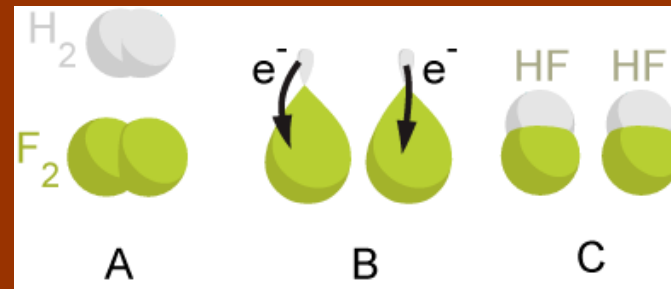


Oxidation-Reduction (Redox) Reactions

- Chemical Reactions
- Electrochemistry
- Oxidation-Reduction Reactions
- Types of Electrochemical Reactions
- Galvanic (Voltaic) Cells
- Half Reactions
- Check Your Understanding



TeachWithFergy

Preview File

Please enjoy this preview of your Student Version of the lesson. I've created this PDF for ease of viewing and to decrease the file size but of course, your lesson will be in PowerPoint format.

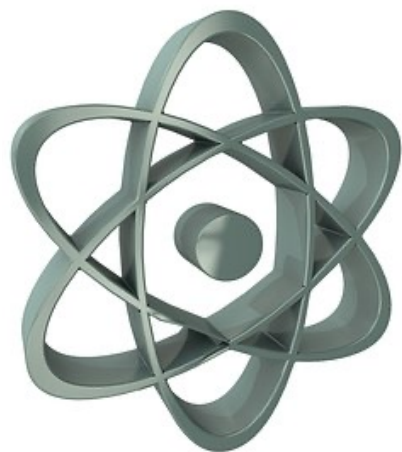
- Some slides appear blank because they have been removed.
- Student versions have portions of the text removed which is given in the teacher version and appear as _____
- Other slides may have on them, this represents writing that has been removed.

Chemical Reactions



- _____
-
- Product: the new substance
- _____
- Reactant atoms rearranged to form product(s)

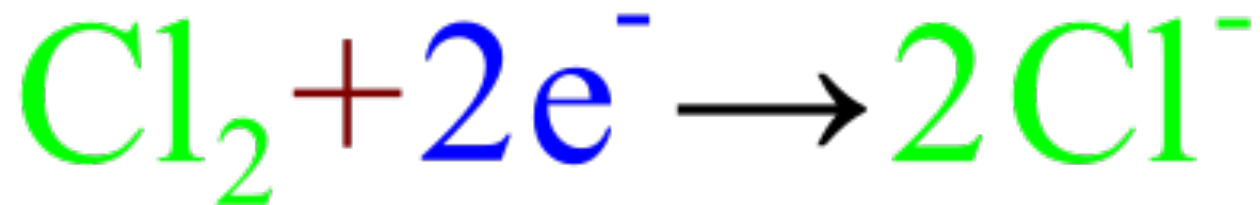
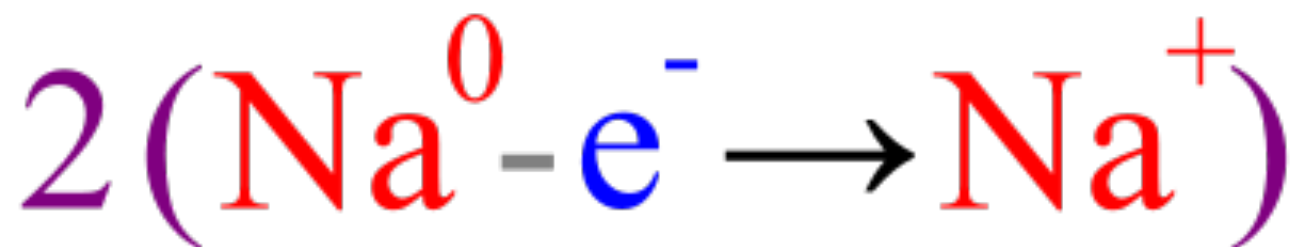
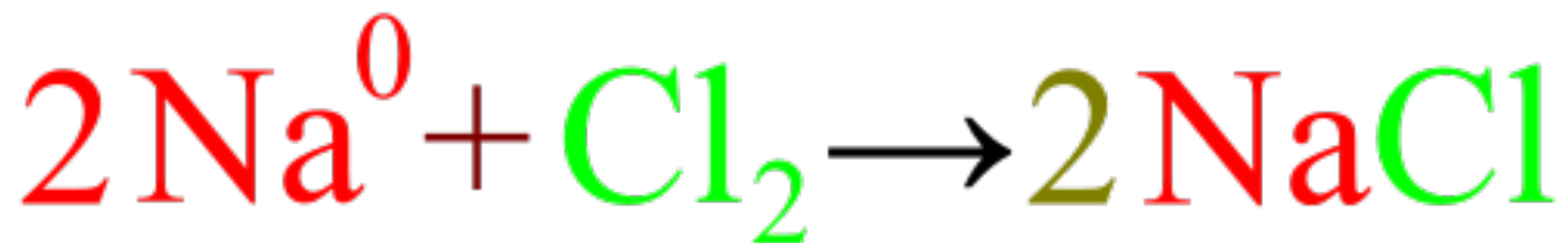
Electrochemistry



- Electricity and chemical reactions
- _____
-
- Oxidation-reduction, or redox, reactions
(transfer of electrons)

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Oxidation-Reduction Reactions



Oxidation-Reduction Reactions

- $\text{H}_2 + \text{F}_2 \rightarrow 2\text{HF}$
- _____
-
- _____
- Reducing agent: oxidized species (H_2)
- Oxidizing agent: reduced species (F_2)
-

Two Ways to Remember



- _____
 - Losing Electrons is Oxidation
 -

- _____
 - Oxidation Is Loss
 - Reduction Is Gain

Characteristics

- Coupled: Oxidation reaction always coupled with reduction reaction
-



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Galvanic (Voltaic) Cells

- Positive voltage
- _____
-
- Cathode: compartment where reduction occurs
- _____
-
- _____
- _____



Galvanic (Voltaic) Cells

- Substances within half-cells connected by closed circuit (electrical wire)
 - Electrons flow from reducing agent to oxidizing agent
-
 - _____



Galvanic (Voltaic) Cells

-
 - _____
 - Ions flow through salt bridge
 - Negative ions (anions) flow from cathode to anode
 - Positive ions (cations) flow from anode to cathode
 - Because cations are being depleted in cathode
 - _____

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Galvanic (Voltaic) Cell Shorthand

-
- $\text{Cu}_{(s)}$: _____
- $\text{Cu}_{(aq)}^{2+}$: species being oxidized (reducing agent)
 - Electrode being oxidized in cell above
- |: separates different states of matter on each side (solid from aqueous)
 - _____
- [: concentration

Galvanic (Voltaic) Cell Shorthand

-
- ||: _____
- $\text{Ag}_{(\text{aq})}^{2+}$: species being reduced (oxidizing agent)
- $\text{Ag}_{(\text{s})}$: electrode at cathode
- Anode always listed on left, cathode on right

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Half Reactions

- Each side of a redox reaction
-
 - Oxidation half reaction: _____
 - Electron on right side of arrow
 - Reduction half reaction: _____
 - Electron on left side of arrow
- Full redox reaction doesn't show electrons

Check Your Understanding

.....

- In the above reaction, identify
 - The oxidizing agent _____
 - The reducing agent _____
 - The species gaining electrons _____
 - The product of oxidation _____
 - The species being oxidized _____
 - The species being reduced _____
 - The species losing electrons _____
 - The product of reduction _____

Check Your Understanding

.....

- Write the galvanic cell shorthand for the above equation
- Write the half reactions for the above equation
 - Oxidation:
 - Reduction: