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The Electrocoagulation Specialists

Summary of Electrolysis

Electrolysis – The process by which chemical changes liberate free elements from a liquid by the passage of an electrical current.



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Definitions

- **Solvent** – A liquid substance capable of dissolving or dispersing one or more other substances.
- **Solute** – A liquid that is dissolved or dispersed in a liquid.
- **Electrode** – A metallic or carbon conductor used to establish electrical contact with a non-metallic part of an electrical circuit.
- **Solution** – A liquid containing a dissolved substance.



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Three Reactions occur during Electrolysis

1. **Electrode:** Material from the electrode will react with the solution in which it is immersed.
2. **Solvent:** The solution (water) will gain or lose an electron and be broken up into its products.
3. **Solute:** Ions present in solution (contaminates) will gain or lose an electron at the electrode and be deposited or transformed.



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Reactions at the Cathode (-)

- **If Inactive Ion:**

The ion will combine with an electron on the cathode as free metal (electroplating).

- **If Active Ion:**

No combination or deposition will occur and water will decompose into its products. Hydrogen gas is liberated at the cathode.



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Reactions at the Anode (+)

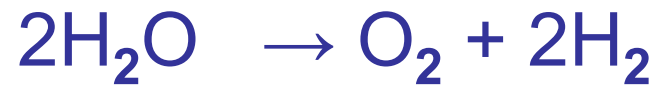
- If a negative ion has a low attraction for an electron, it will lose an electron to the anode and be deposited on the anode or transformed.
- If a negative ion has a strong attraction for an electron, water will be decomposed into its products. Oxygen gas is liberated at the anode.
- If an anode is composed of an active metal, the anode will sacrifice metallic ions into solution.



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Typical Electrolytic Reactions





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Common Metallic Oxide Complexes:

