**Electrolytic Cells**

**YOYO:** Compare and contrast the two images below. Note visible similarities and differences.

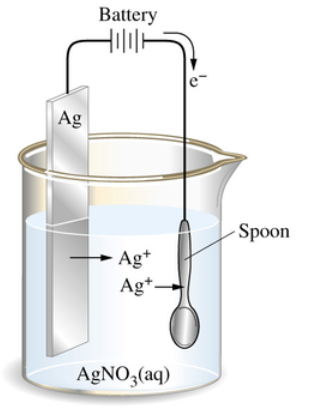
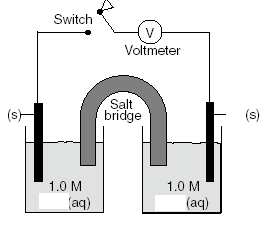
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Figure 2

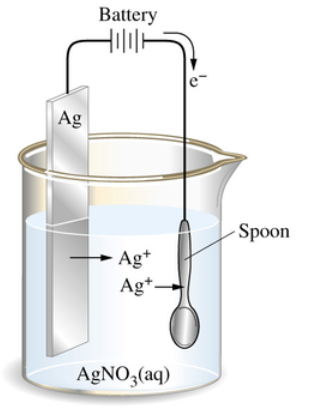
Figure 1

|  |  |
| --- | --- |
| **Similarities** | **Differences** |
|  |  |

Electrolytic Cell

* Reaction cannot occur spontaneously, so electricity is used to force the reaction to occur. In other words, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is converted to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (opposite of voltaic cell)
* When electricity is used to force a chemical reaction to occur, the process is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Electrolytic Cell Cathode | Electrolytic Cell Anode |
| * Where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are \_\_\_\_\_\_\_\_\_\_\_\_\_ * The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrode (opposite of voltaic) * Electrode where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs (red cat) | * Where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrode (opposite of voltaic) * Electrode when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs (an ox) |



Electrolytic Cells: Uses

1. To obtain pure elements such as sodium and chlorine by the electrolysis of molten salts.
   1. Ex: 2 NaCl(l) 🡪 2Na(s)  +  Cl2(g)
2. To electroplate metals onto a surface. The material to be plated with a metal is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is made of the metal used for the plating.

Compare and Contrast

|  |  |  |
| --- | --- | --- |
|  | Galvanic/Voltaic Cell | Electrolytic Cell |
| Flow of e- (Spontaneous or Forced) |  |  |
| (+) Electrode |  |  |
| (-) Electrode |  |  |
| Direction of e- Flow |  |  |
| Reduction Half Cell |  |  |
| Oxidation Half Cell |  |  |