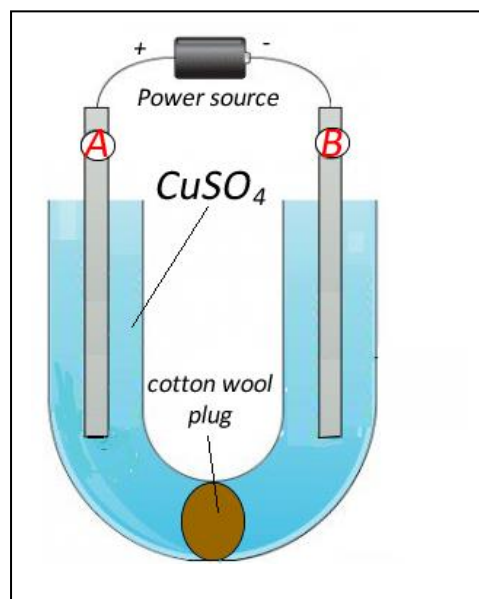


Revision 1

- Electrolysis with solutions and equilibrium.

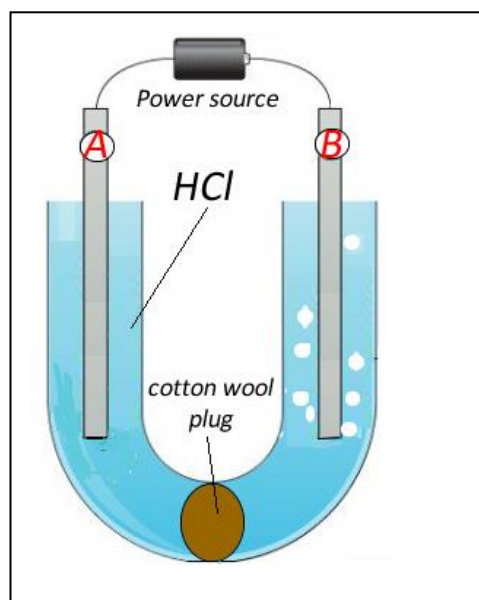
1) Electrolysis is performed by running direct current through a 1.00 M CuSO_4 solution, as pictured on the right.

- Identify the anode and cathode.
- What is the strongest oxidant present?
- What is the strongest reductant present?
- What products are formed at the cathode?
- What products are formed at the anode?
- How does the pH change at the:
 - Anode
 - Cathode
- Write the half reaction that takes place at the:
 - Anode
 - Cathode



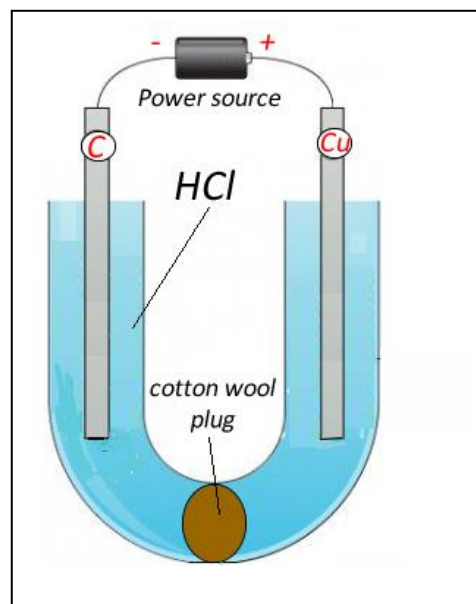
2) Electrolysis is performed by running direct current through a 1.00 M HCl solution, as pictured on the right. Hydrogen gas is seen to come from electrode B.

- Identify the anode and cathode.
- What is the strongest oxidant present?
- What is the strongest reductant present?
- What products are formed at the cathode?
- What products are formed at the anode?
- How does the pH change at the:
 - Anode
 - Cathode
- Write the half reaction that takes place at the:
 - Anode
 - Cathode

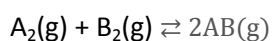


- 3) Electrolysis is performed by running direct current through a 1.00 M HCl solution, as pictured below. Copper and carbon electrodes are used.

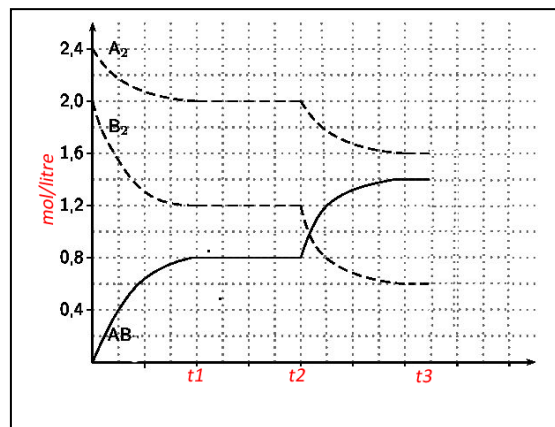
- Identify the anode and cathode.
- What is the strongest oxidant present?
- What is the strongest reductant present?
- What products are formed at the cathode?
- What products are formed at the anode?
- How does the pH change at the:
 - Anode
 - Cathode
- Write the half reaction that takes place at the:
 - Anode
 - Cathode
- What will the half equations at the anode and cathode be if the electrodes are reversed and the carbon electrode is connected to the positive terminal and copper electrode connected to the negative terminal.



- 4) Two unknown gases A_2 and B_2 were placed in a sealed 2.00 litre container and the temperature kept constant. The gases were allowed to react according to the equation below.



The concentration of each gas was measured over time and the results shown on the graph on the right.



- Calculate the equilibrium constant:
 - between t_1 and t_2
 - just before t_3
- At t_2 the temperature is suddenly increased. Is this an exothermic or endothermic reaction? Explain.
- At t_3 the volume of the reaction is doubled. On the graph above, indicate how the system changes and how it responds to the change.
- What is the value of the equilibrium constant once the system has reached equilibrium after the change made at t_3 ?