EXPERIMENT 3.3

COPPER ELECTROWINNING

AIM:
To separate the copper metal from the leach (copper sulphate solution) by using electroplating.

MATERIALS:

- Graphite Anode
- Stainless steel cathode
- 250 ml beaker
- Variable DC power source (power pack)
- Voltmeter
- Variable resistor
- Copper leach solution
- Measuring cylinder
- Safety glasses
- 2 x 20 ml sample bottles
- Electronic balance
- 6 electrical leads

Circuit diagram to go here

PROCEDURE:

1. Place leach solution into beaker.
2. Weigh the stainless steel cathode. Record the weight in the table below.
3. Place the stainless steel cathode and the graphite anode in the beaker and ensurethat they are NOT touching.
4. Connect the DC power source to the variable resistor and connect your anode and cathode to the variable resistor (your teacher will show you the connections to use) and turn the DC power source to approximately 2volts. Adjust the variable resistor so that the measured voltage is 1.0 volts.
5. Leave running for 2 – 4 hours.
6. Turn off power source. Remove a sample of solution for later analysis.
7. Remove stainless steel cathode and examine it carefully – it should have solid copper metal coated to it. Wash with water and allow to dry.
8. Weigh the stainless steel cathode. Record the result.
9. Strip the copper metal from the stainless steel cathode if you can.It should peel off in one piece (depending).

Mass of Stainless steel cathode at start (g)	Mass of Stainless steel cathode after electrowinning (g)	Mass of Copper plated on the cathode (g)

Metal Extraction Chemistry