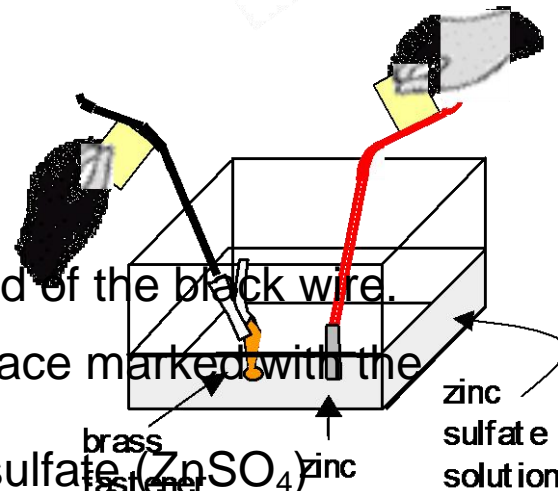


# Electroplating

## Procedure:

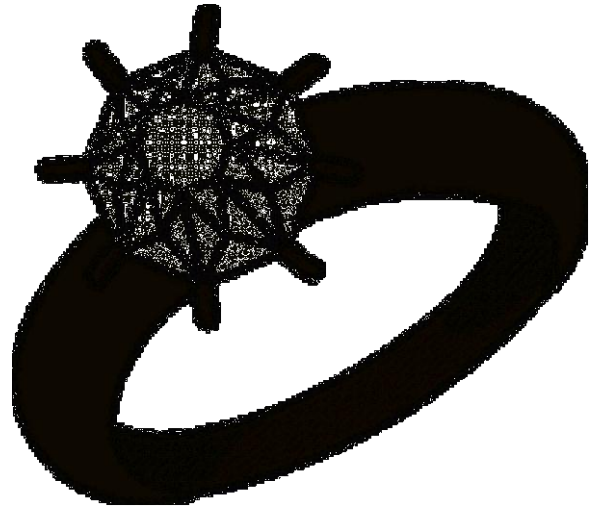
1. Always wear safety goggles.
2. Clip a clean brass fastener to the end of the black wire.
3. Hold one wire in each hand at the place marked with the yellow label.
  - Find the plastic tub filled with zinc sulfate ( $ZnSO_4$ ) solution.
  - Place the red wire with zinc metal into one end of the plastic tub.
  - Place the black wire with the brass fastener into the other end of the tub so that the fastener is about half covered by solution.



**DO NOT touch the wires together.**  
**DO NOT put your fingers in the solution.**

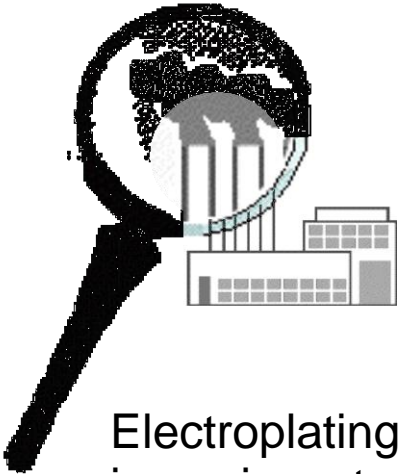
4. Hold the wires in place for about 45 seconds.
5. Remove the wires from the solution and briefly dip the ends of both wires into the beaker of rinse water. Look closely at the brass fastener. **Do you notice any change in the fastener?** You have zinc plated the fastener!
6. Put the fastener in the cup labeled "Used Metals."  
Try the experiment again with the other metals on the table.  
**Are your results the same or different?**
7. Rinse all used metals in the rinse water and put them in the cup labeled "Used Metals." Wash your hands in the sink.

How did the zinc get on the brass fastener?



## A Closer Look:

In this experiment, an electrical current from the battery flows through the fastener and the solution. Zinc ions (positively charged zinc atoms) in the solution are attracted to the fastener at the negative terminal of the battery. When the zinc ions hit the fastener, they are supplied with electrons from the battery and are turned into a solid zinc coating. This process is called [electroplating](#).



Electroplating is used in industry to coat one metal (e.g., iron, zinc, steel) with another metal (e.g., zinc, copper, silver). Only an electrically conducting metal can be plated in this way. Electroplating is often done to protect a metal from rust; for example, zinc is used to protect iron. Iron that is coated in zinc is said to be [galvanized](#). Electroplating also is used to enhance the appearance of metal objects; for example, some jewelry is coated with gold.