

Electroplating :

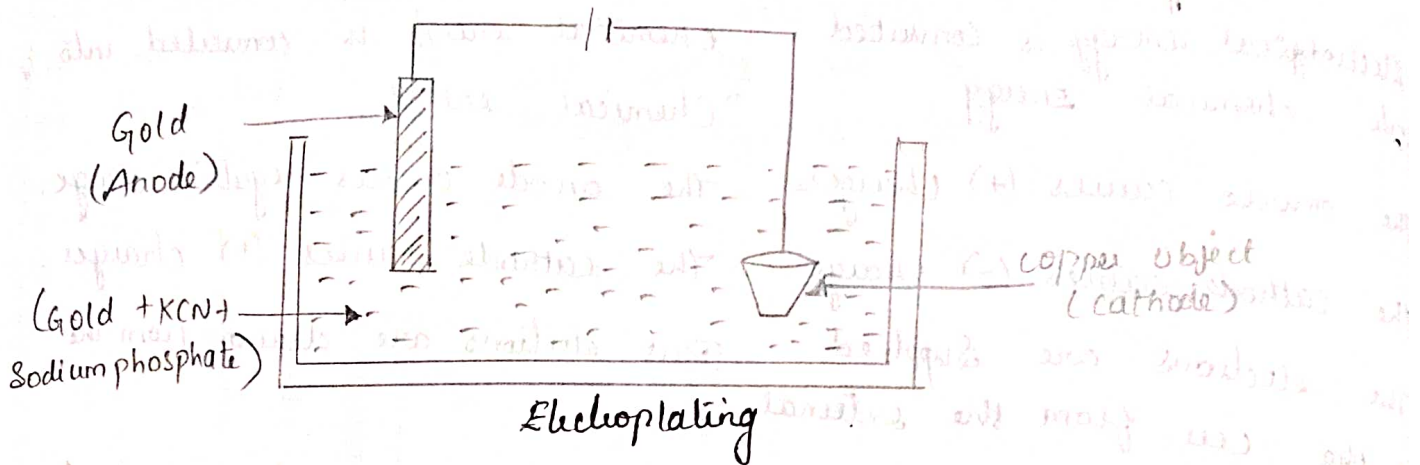
Electroplating is the process in which the coating metal is deposited on the base metal by passing a direct current through an electrolytic solution containing the soluble salt of the coating metal. In the electrolytic cell, the base metal to be plated acts as cathode where as the coating metal or good electrical conducting inert material acts as an anode.

Objectives of Electroplating :

- * To increase the resistance to corrosion of the base metal.
- * To increase the decorative and commercial values of the articles.
- * To improve the hardness and physical appearance of the articles.
- * To obtain a polished surface.

Principle:

If the anode is made of coating metal itself in the electrolytic cell, during electrolysis, the concentration of electrolytic bath remains unaltered, since the metal ions deposited from the bath on cathode are replenished continuously, by the reaction of free anions with the anode.

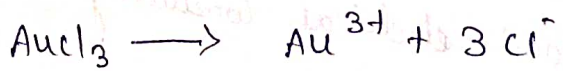


Process:

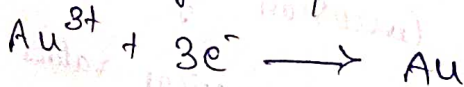
The copper object to be placed, is first treated with dil. or dil. H_2SO_4 . The cleaned object is then made cathode of an electrolytic cell and gold foil as the anode. $AuCl_3$ solution is taken as the electrolyte. When the current is passed from the battery through the solution, gold dissolves in the electrolyte and deposits uniformly on the copper object. Thus, a thin layer of gold is obtained on the article (at cathode). Sodium thiosulphate or Gelatin is used as additives.

Reaction:

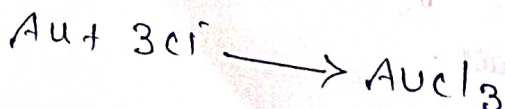
$AuCl_3$ ionises as



At Cathode: On passing current, Au^{3+} ions move toward the cathode and get deposited on the Au object.



At anode: The free Cl^- ions move towards the gold anode and dissolve an equivalent amount of Au to form $AuCl_3$.



characteristic of Gold plating :

- * For Jewellery very thin coating is given (0.05 - 1.0 microns)
- * It gives high quality decorations and high oxidation resistant coatings.

Applications :

- * Gold plating is used in modern Semiconductor technology
- * It provides corrosion protection & decoration finishes.