



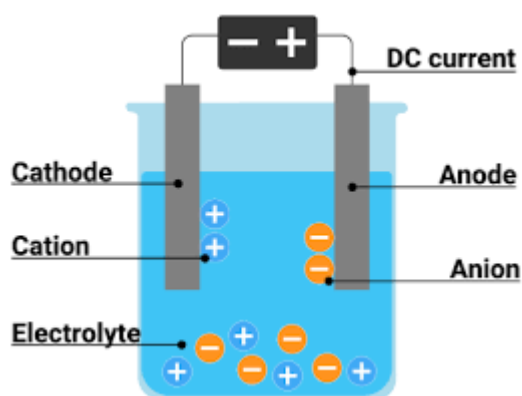
## 19CH201 - ENGINEERING CHEMISTRY

### UNIT-1 - ELECTROCHEMISTRY

#### 1.9. Electrolysis -Electroplating (Au)

##### Electrolysis

It is the process of chemical decomposition(ions separation) by passing an electric current through a liquid or solution.



##### Electroplating

Electroplating is a process that uses an electric current to reduce dissolved metal cations (from anode) so that they form a thin coherent metal coating on an electrode (cathode). The process used in electroplating is called electrodeposition.

##### Electroplating of Gold:

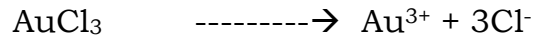
###### **Process:**

- Anode : Au  
Cathode : Silver (Ag) spoon  
Electrolyte : AuCl<sub>3</sub>  
Current density: 0.2 to 0.5 A/dm<sup>2</sup>  
Temperature : room temperature

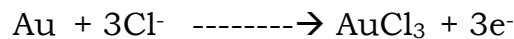


- Gold plating is a term that is generally used to describe a thin gold coating on an object (Silver spoon).
- In this process, the metal (gold) that has to be plated is used as the anode and the material to be plated is made the cathode (Silver spoon).

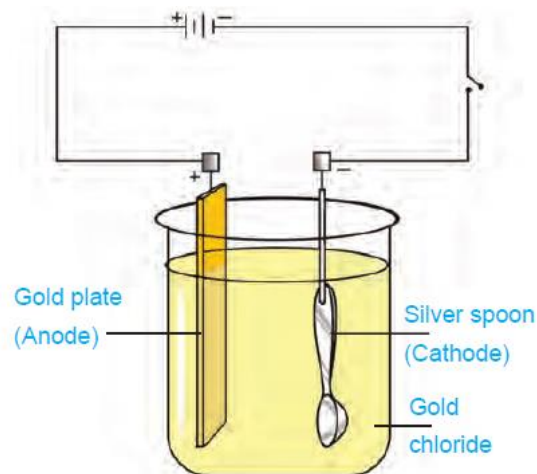
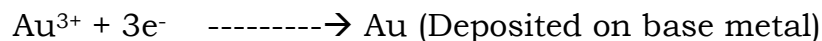
- Reactions:



- At anode



- At Cathode



- The ions of the gold are present in the electrolytic solution along with other ions that help in conducting electricity.
- The common electrolyte used in gold plating is 10% AuCl<sub>3</sub>.
- When the current is applied, the metal ions in the anode get oxidized and dissolve in the electrolyte.
- These ions then get reduced at the cathode and form a thin layer on the material to be electroplated (Silver spoon).

Advantages:

- Gold plating is mainly done to improve the appearance
- Enhance the value or prevent corrosion.



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- It is mostly used jewellery and also employed in the electronics industry.



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