

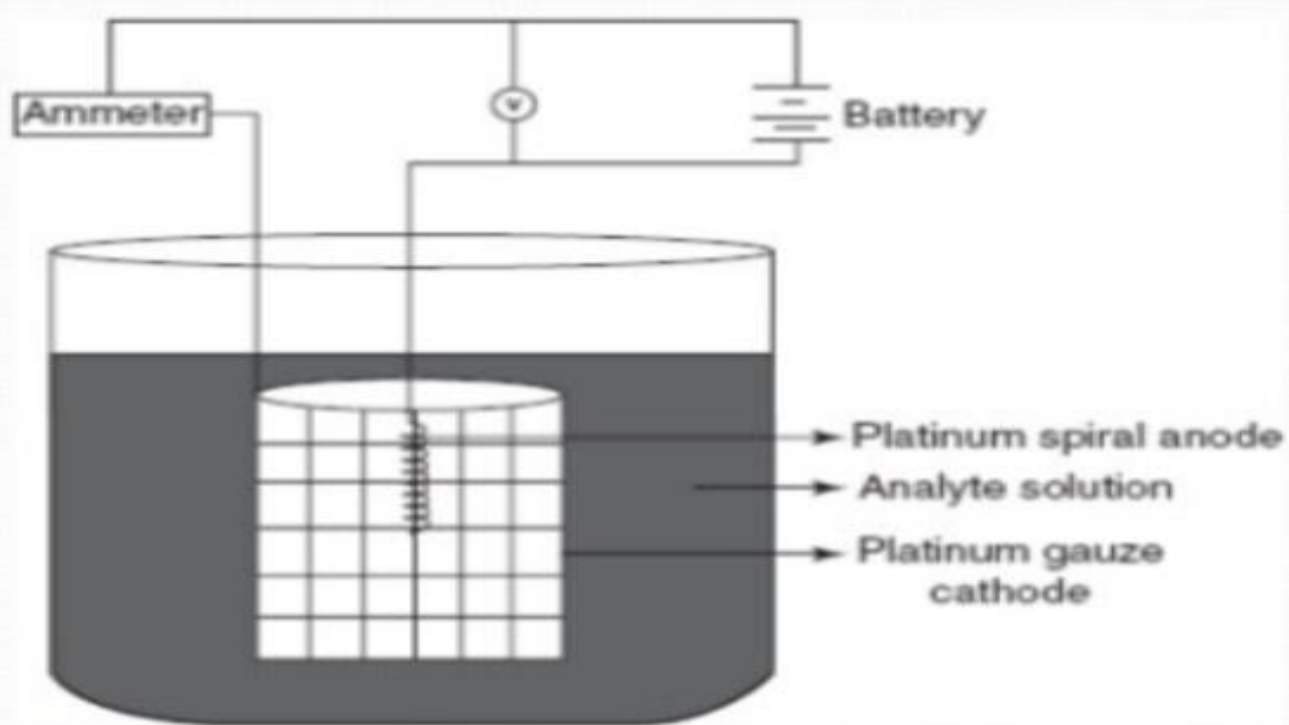
# ELECTROGRAVIMERY

- INTRODUCTION

- Electrogravimetry is a method used to separate and quantify ions of a substance, usually a metal.
- In this process, the analyte solution is electrolyzed.
- Electrochemical reduction causes the analyte to be deposited on the cathode.
- The cathode is weighed before and after the experiment, and weighing by difference is used to calculate the amount of analyte in the original solution.
- Controlling the potential of the electrode is important to ensure that only the metal being analyzed will be deposited on the electrode.

# PRINCIPLE

the main principle involved in this method is the deposition of the solid on an electrode from the analyte solution .



## TYPES OF ELECTROGRAVIMETRY

there are two types electrogravimetry method .

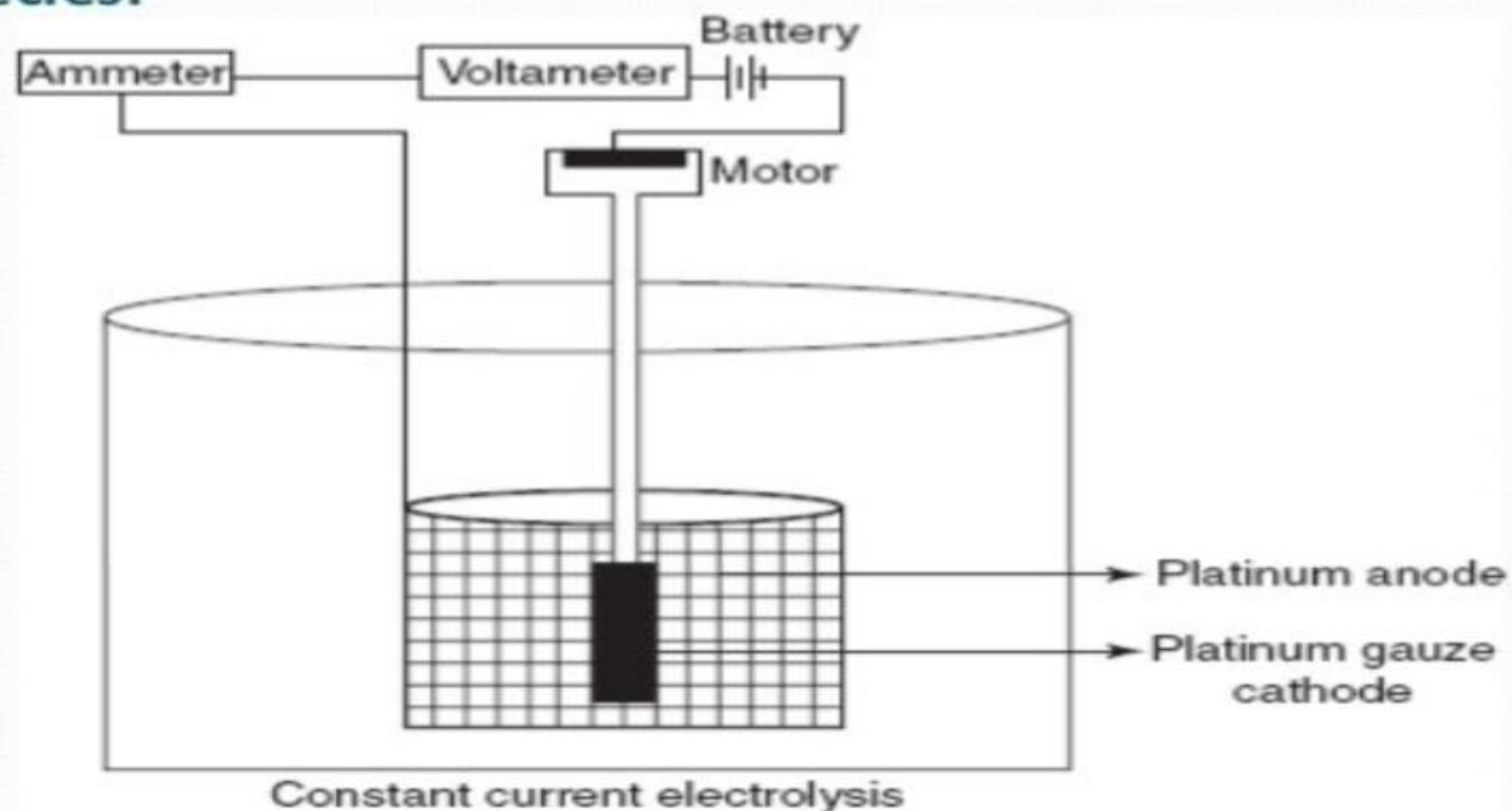
1. Constant current electrolysis.
2. Constant potential electrolysis.

### 1. constant current electrolysis.

- in this process the current is kept constant ,and potential is increased .
- Here no control of the potential of the working electrode is exercised ,and the applied cell potential is held at a more or less constant level but provide a large enough current to complete the electrolysis in a reasonable length of time .
- And a fixed amount of the current can be passing between the anode and cathode .



The limitation of constant current electrolysis is it cannot be used for the separation of ion in solution containing single species.



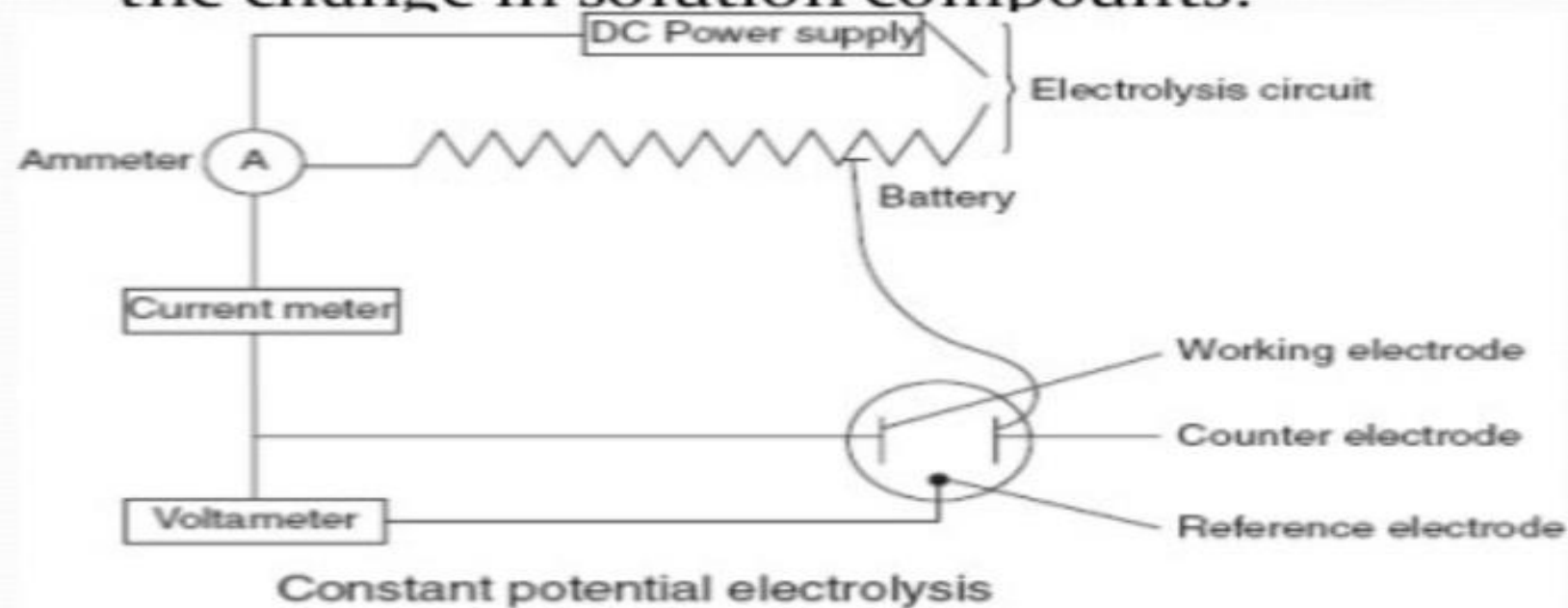
- 2 Constant potential electrolysis .

It is the simplest way of performing an analytical electrolysis is to maintain the applied cell potential at a constant value.

- it is more used in the separation of the compounds from a mixture in which the decomposition potentials are not widely separated .
- A fairly large voltage is applied to working electrode order to force a constant relatively large current flow through the cell.
- The current is often on the order of milliamps (ma) instead of microamps (microamperes), as is typically the case in controlled potential electrogravimetry.

- Three electrode system are used.

1. Working electrode : used for the deposition of the sample.
2. Counter electrode: used for the current sink.
3. Reference electrode: maintains the fixed potential despite the change in solution compounds.



- for example : the determination of copper from an acidic solution (either nitric acid or sulphuric acid solution or mixture of two acids) at constant current . Suppose an EMF of 2-3v is applied then the reaction taking place are given below.







- **THANK YOU**

