

## UseFull Electrochemical Definitions





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**Potentiostat/Galvanostat:** It is an instrument by which electrochemical reactions can be studied and analysed:

- In potentiostatic mode the potential is imposed and the current is measured.
- In galvanostatic mode the current is imposed and the potential is measured.



**Working Electrode (WRK):** The working electrode is the electrode in an electrochemical system on which the reaction of interest is occurring.



**Auxiliary Electrode (AUX):** The auxiliary electrode is an electrode used electrochemical cell in which an electric current is expected to flow. It establishes the electrical potential against other potentials may be measured and the working electrode at which the cell reaction takes place.



**Reference Electrode (REF):** The electrode which has a defined and stable potential enabling to measure the potential of working electrode during an electrochemical test. In order to have the stable potential on REF electrode, the current should pass through WRK and AUX electrodes.



**Electrolyte:** The electrolyte has several purposes in an electrochemical cell. The primary function is to allow conductivity between the anode and the cathode. Secondly, it also allows the transport of reactants to the electrodes and products away from the electrodes. In the electrolyte phase, charge is carried by the movement of ions. The most frequently used electrolytes are liquid solutions containing ionic species. Solid electrolytes also exist and are technologically important in the fabrication of batteries and electrochemical devices.

**Electrochemical Cell:** An electrochemical cell is a device capable of generating electrical energy from electrochemical reactions or using electrical energy to cause chemical reactions. It can be a 3 electrode system, a battery, a metal which is being corroded.

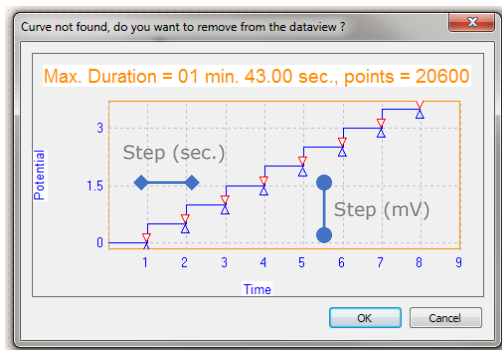


**Open Circuit Potential (OCP):** It is the potential in a working electrode comparative to reference electrode where there is no current or potential existing in the cell. In Origamaster5 software it is defined as "Free" potential. It can also be called « OCV ».

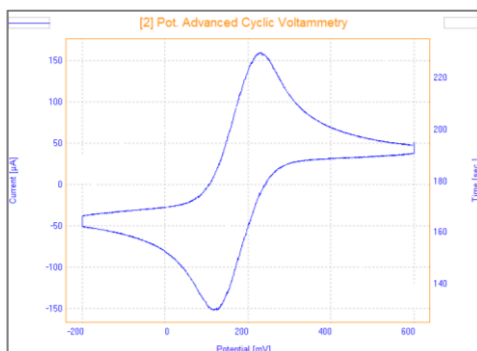


**Scan Rate:** The amount of potential scanned to working electrode by time. Its unit in Origamaster5 software is defined as mV/s.

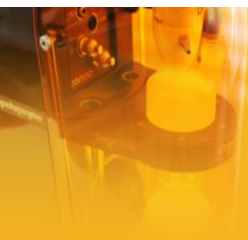
$$\text{Scan rate} = \frac{\text{Step (mV)}}{\text{Step duration (sec.)}}$$



**Voltammogram:** Is the graph of current versus potential or visa versa in which many information can be found out about what is happening in an electrochemical cell.



**Vertex Potential:** It is the working potential window. "Higher/Maximum vertex potential" is the maximum potential window and "Lower/Minimum vertex potential" is the minimum potential window in the electrochemical test which defined through software. It can be defined versus reference electrode's potential (Vs REF) or OCP's potential (Vs Free).



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