General Electrochemistry
AP-GE03

Pot. Interactive Cyclic Voltammetry


[2] Pot. Interactive CV
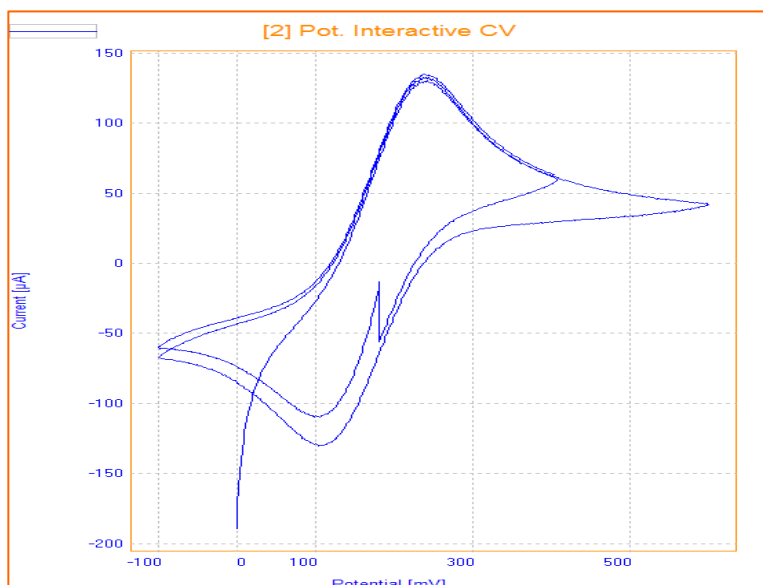
This Application Note describes how the Pot. Interactive CV method works by giving an example with Ferri/Ferrate solution.

OrigaLys ElectroChem

2010 – ORIGALYS – 2020
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MERCI – THANK YOU – GRACIAS

Introduction

The Pot. Interactive CV is the perfect tool to record a polarisation curve and particularly to investigate any new electrochemical samples. You can set the potential setpoints versus the OCP or the reference electrode potential. You can modify the potential setpoints during the experiment itself.
The interactive key allows you to hold the potential, reverse the scan direction and modify the Potential 1 and Potential 2 limits and change any parameters of the CV **at any time!**

While an experiment is running, 4 interactive keys (icons) are available. The example hereafter shows how these interactive keys can be used.

Hold Continue Reverse Modify

CV Interactive
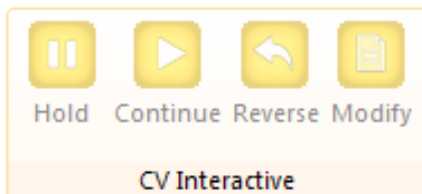
Parameters

The Parameters of the Pot. Advanced CV are shown in figure 1.
With the above default settings, the initial potential is set to 0 mV versus REF electrode, then scan rate is set at 20 mV/s the upper potential 1 (vertex 1) is +600 mV versus REF. The vertex 2 is defined as -100 mV.

What makes this CV special is that during the test by pushing the button on « CV Interactive » box, all these parameters can be modified during the test.

Change the parameters during the measurement.

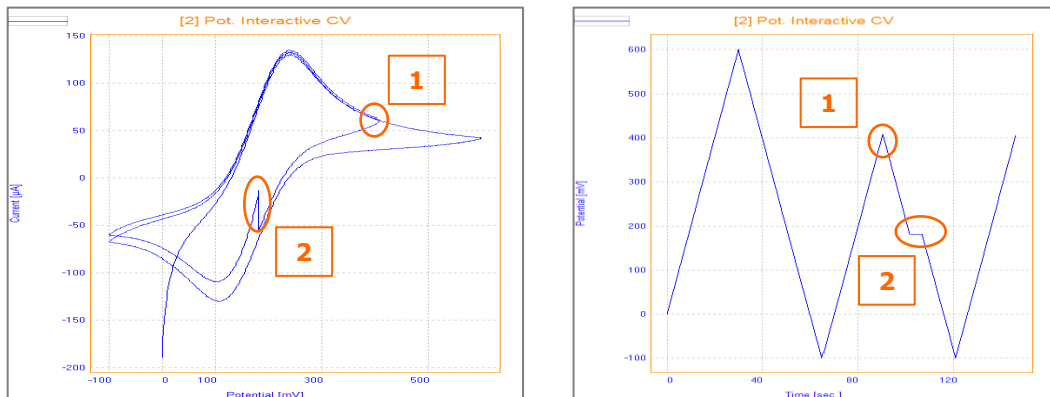| Properties	
Display all Details Graph	
Pot. Interactive CV	
Potentials are set versus	REF
Initial potential (mV)	0
Potential 1 (mV)	600
Potential 2 (mV)	-100
Scan rate (mV/sec.)	20
Cycle	2
Maximum range	Auto
Minimum range	Auto
Analog Filter	Auto
Open circuit at end	Yes

Figure 1: The parameters

Figure 2: Final results, Potential vs Current and Time vs Potential

While an experiment was running, in potential of 407 mV the scan direction reversed (point 1 in figure 2) and the potential 1 will change by clicking on the **Reverse** button, then the potential was being hold in 104 mV for 10 second by clicking the **Hold** button (point 2 in figure 2).

After, the test continued. From the -100 mV, the scan rate changed to 50 mV/s by clicking the **Modify** button.

TIP: It could be interesting to start with a wide range of potentials (for instance, from -10 V to +10 V. Then, by clicking on **Reverse**, you can reduce the scan and get the accurate range fitting your experiment.

Figure 3: Ribbon on the Sequence section. It contains all the tools to create the sequence of methods

1- To hold the potential

2- To continue the test after changing the parameter

3

Reverse	3- To change the scan direction and the vertex potentials
Modify	4- To change all the parameters of CV test, such as scan rate or number of cycles.

Instrument and Electrodes

Figure 4: OrigaFlex OGF500

Electrode setup

Reference Electrode (REF)	Calomel Type: OGR003
Counter Electrode (AUX)	Platinum wire Ø1mm Type: OGV005
Working Electrode (WRK)	Platinum Ø5mm Type: EMEDTPTD5
Electrolyte	Ferri/Ferrate solution 5×10^{-3} M in KCl
Instrument	OrigaFlex OGF500
Software	OrigaMaster

REF
Calomel

AUX
Platinum wire Ø1 mm

WRK
Platinum Ø5 mm

Figure 5: Electrochemical cell