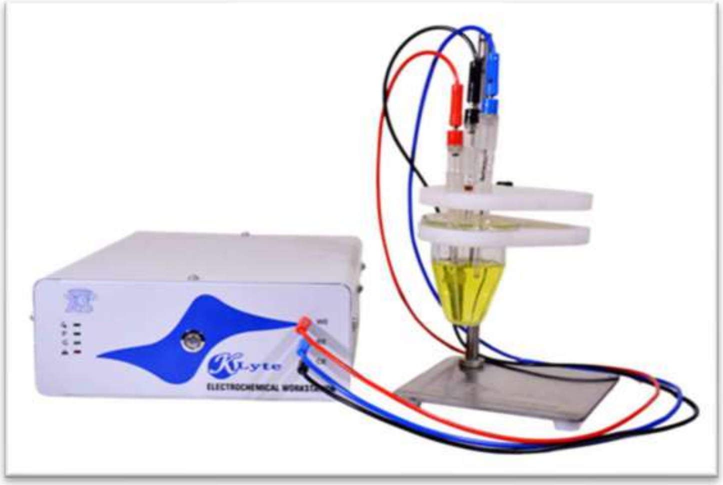

Kanopy's PG-Lyte 1.0 is a high-end Potentiostat/Galvanostat. It can perform many electroanalytical techniques for physical electrochemistry, nanotechnology, corrosion, sensor, and battery research. This instrument is quite suitable for measurements in both aqueous and non-aqueous systems. It is sensitive enough to record electrical signals in the nano ampere range.

This document is specially prepared for the potential customers who can get an impression about PGLyte 1.0. The instrument generated raw data file (.xls) of each and every experiment shown here will be provided separately. The naming of the raw-data corresponding to each of the figures is given in the table below.

Sl. No.	Experiments	The naming of the .xls data file
1	Cyclic Voltammetry	CV-ferro-ferri
2	Differential Pulse Voltammetry	DPV-Ferro-ferri-Oxidation
3	Tafel	Tafel
4	Galvanostatic Charge-Discharge	GCD-ferro-ferri

1. Cyclic Voltammetry

Cyclic Voltammetry technique is an important and most widely used electroanalytical technique in electrochemical research. A PG-Lyte instrument can effectively perform the cyclic voltammetry experiment for single/multiple cycles (max 10,000cycles) over wide potential ranges (-9.9V to +9.9V) and wide scan rate ranges by choosing suitable current ranges and data-sampling time setting.

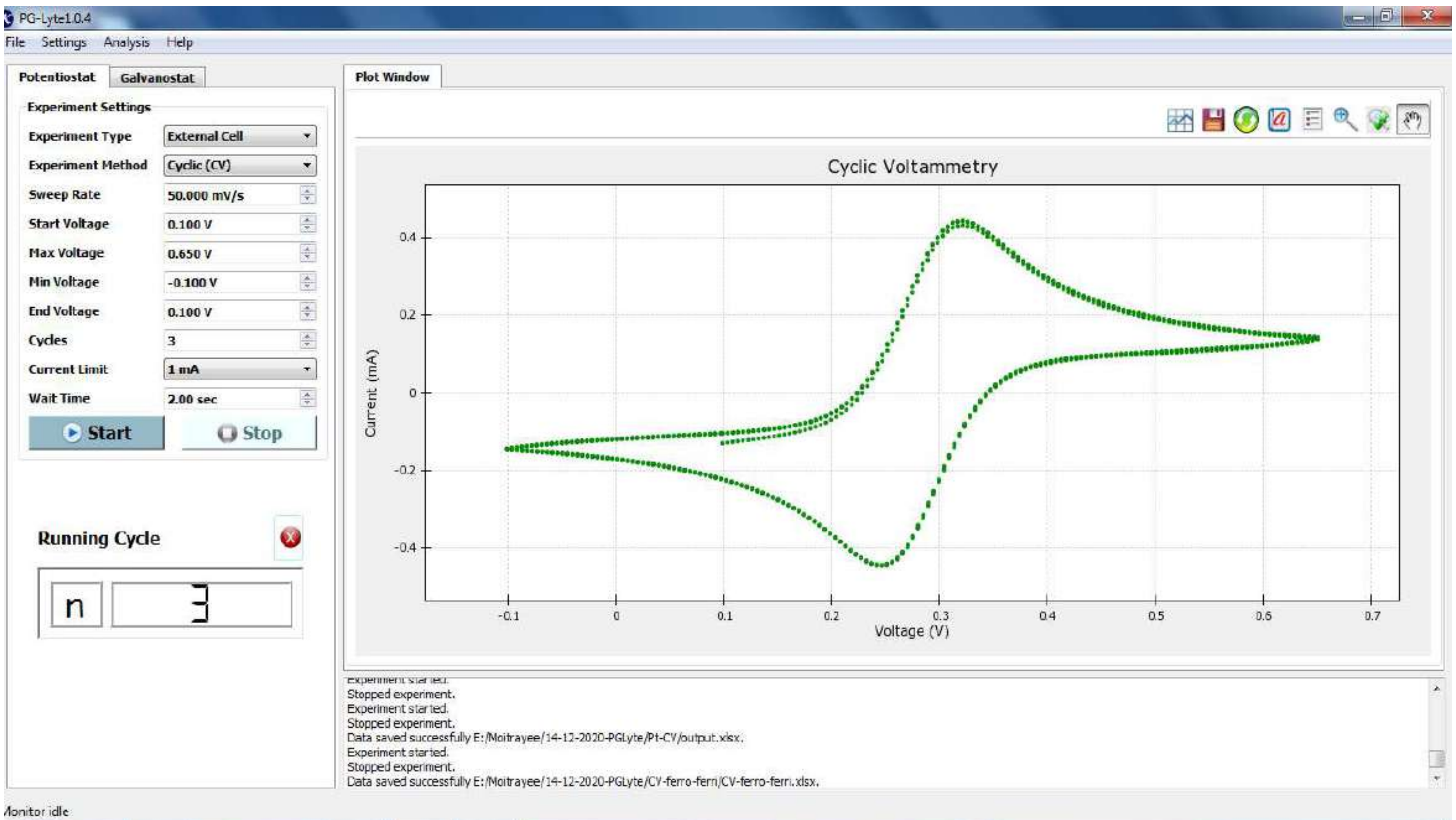

Figure 1. Cyclic voltammogram of Potassium ferrocyanide-ferricyanide redox couple in potassium chloride vs. Ag/AgCl, 3M KCl reference electrode

2. Differential Pulse Voltammetry

Pulse Voltammetry technique is often used when one needs enhanced discrimination of Faradaic current of electrochemical measurement and widely used in the electrochemical sensor research. The PG-Lyte instrument's sensitivity to measure low current in the nano Ampere range combined with the DPV technique enables the user to detect low concentration electroanalytes.

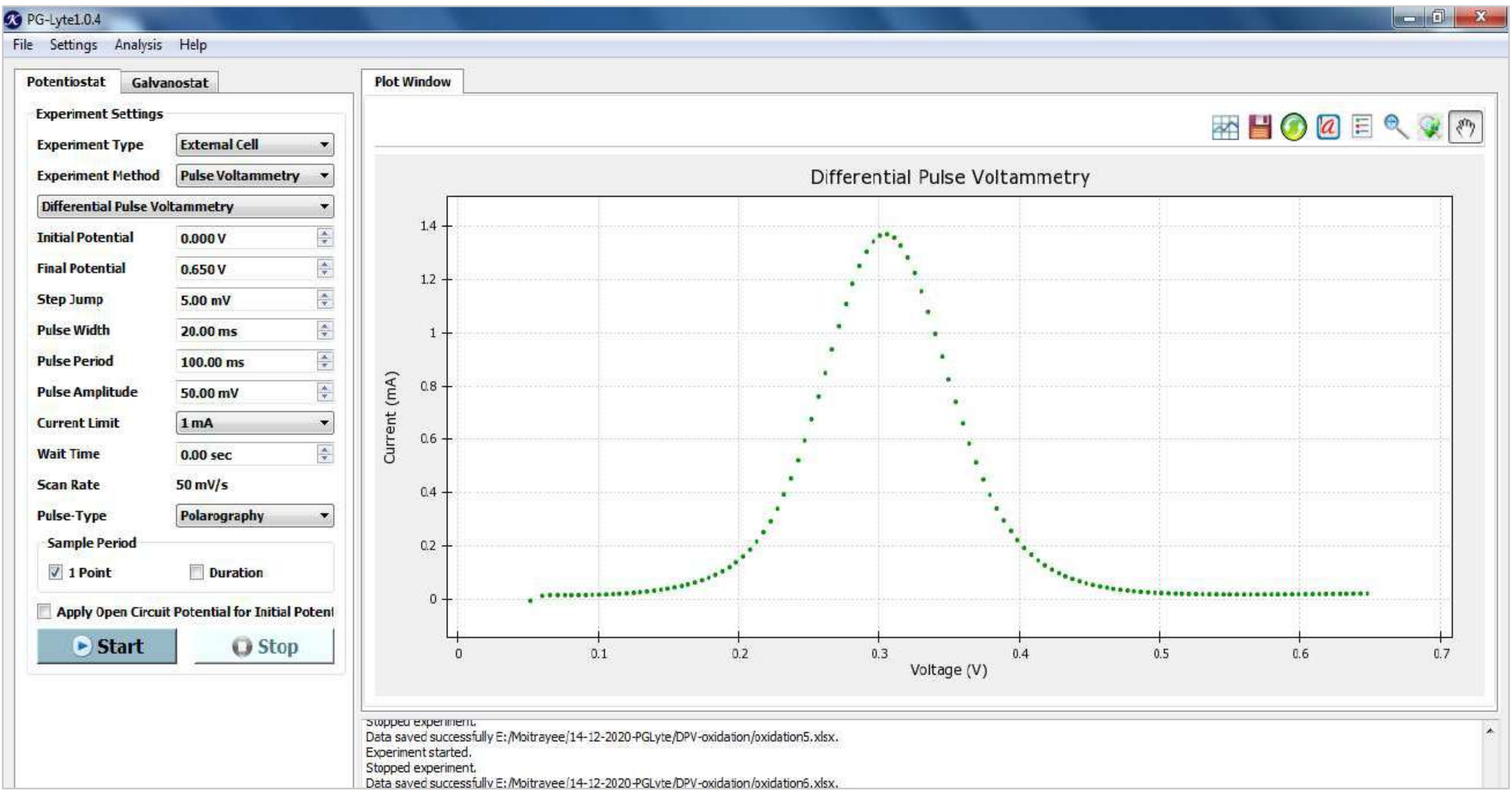

Figure 2. Differential Pulse Voltammogram of Potassium ferrocyanide-ferricyanide redox couple in potassium chloride.

3. Tafel

PGLyte software can provide a complete corrosion analysis in a very user-friendly manner without any external plotting software. Tafel experiment can be carried out either by Auto or Manual OCP mode. In Auto mode, the instrument first measures the OCP and then start measuring the log|i| vs. polarization voltage; i.e., the Tafel plot is drawn. In Manual mode, the user can manually put the OCP value in the setting. Figure 3A, 3B, and 3C demonstrate a step-by-step procedure in Tafel and corrosion analysis with PG-Lyte. This demonstration experiment is performed using a platinum wire working electrode in a dilute sulphuric acid electrolyte.

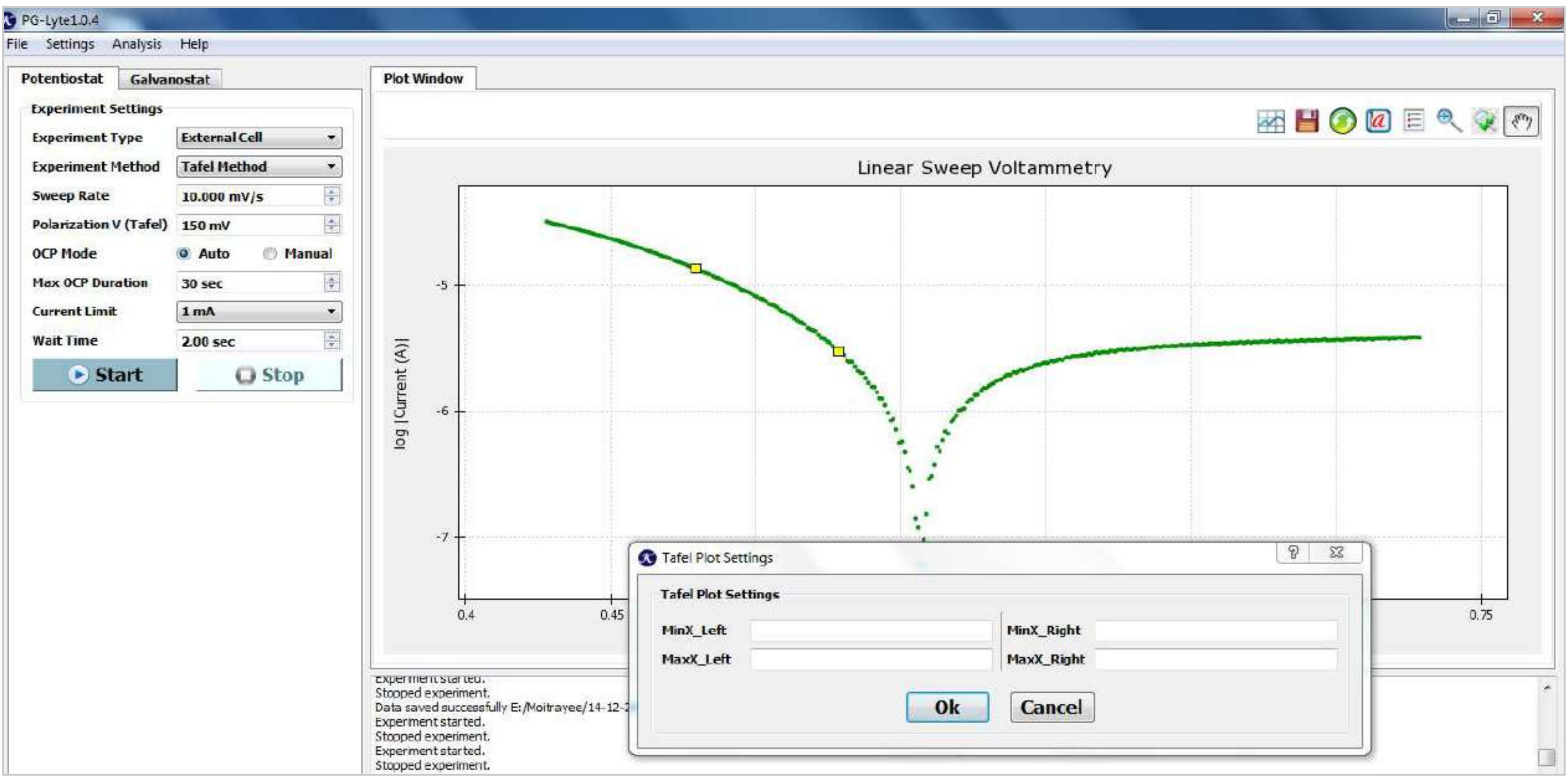

Figure 3A. Selecting points from the linear sections of the Tafel plot to draw tangents for Tafel slope determination. The slope can be corrected as many times as possible without running the experiment.

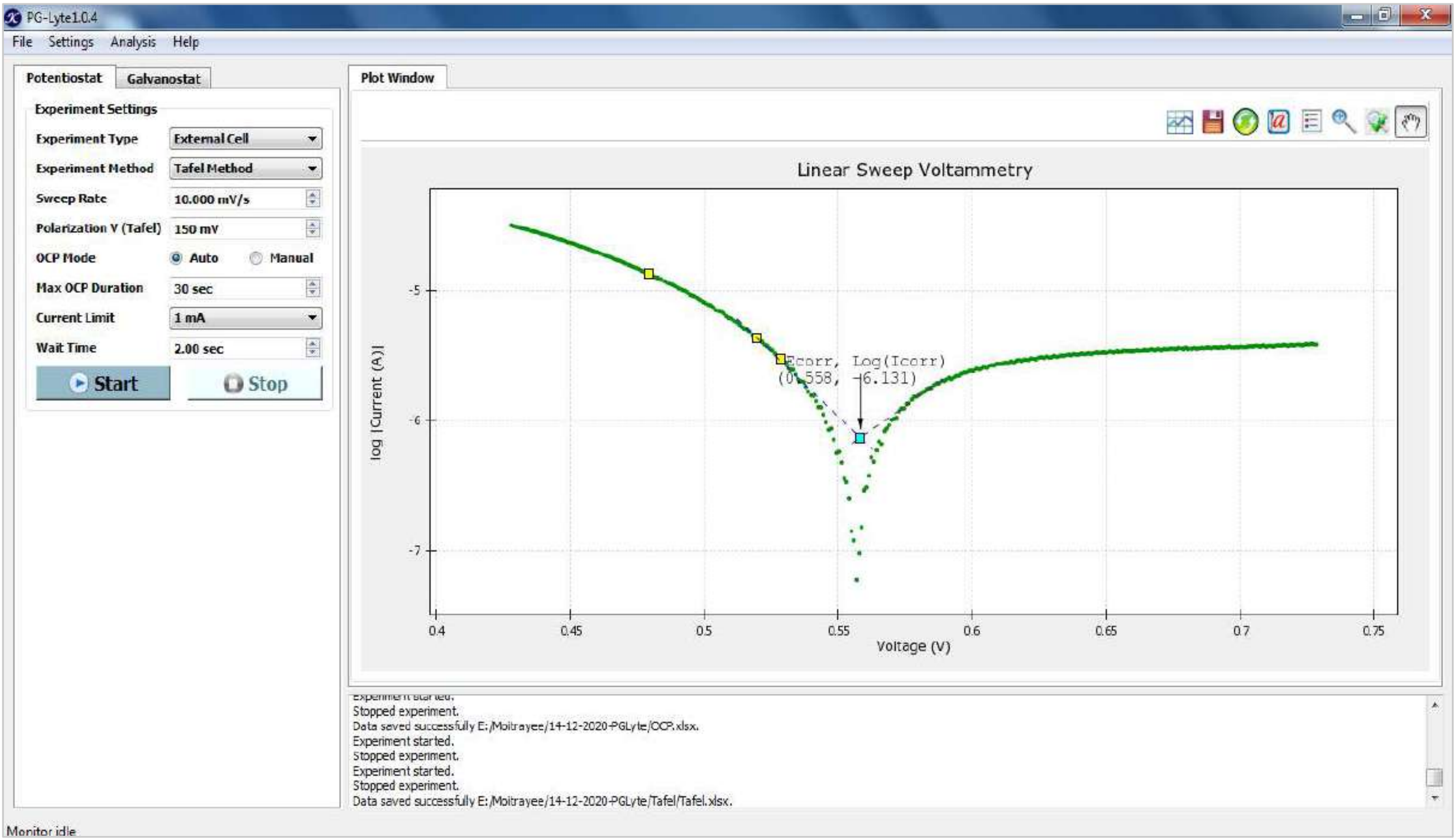

Figure 3B. The intersection point of the tangents gives the value of corrosion current (I_{corr}) and corrosion potential (E_{corr}).

Electrochemical Experiments with PG-Lyte 1.0

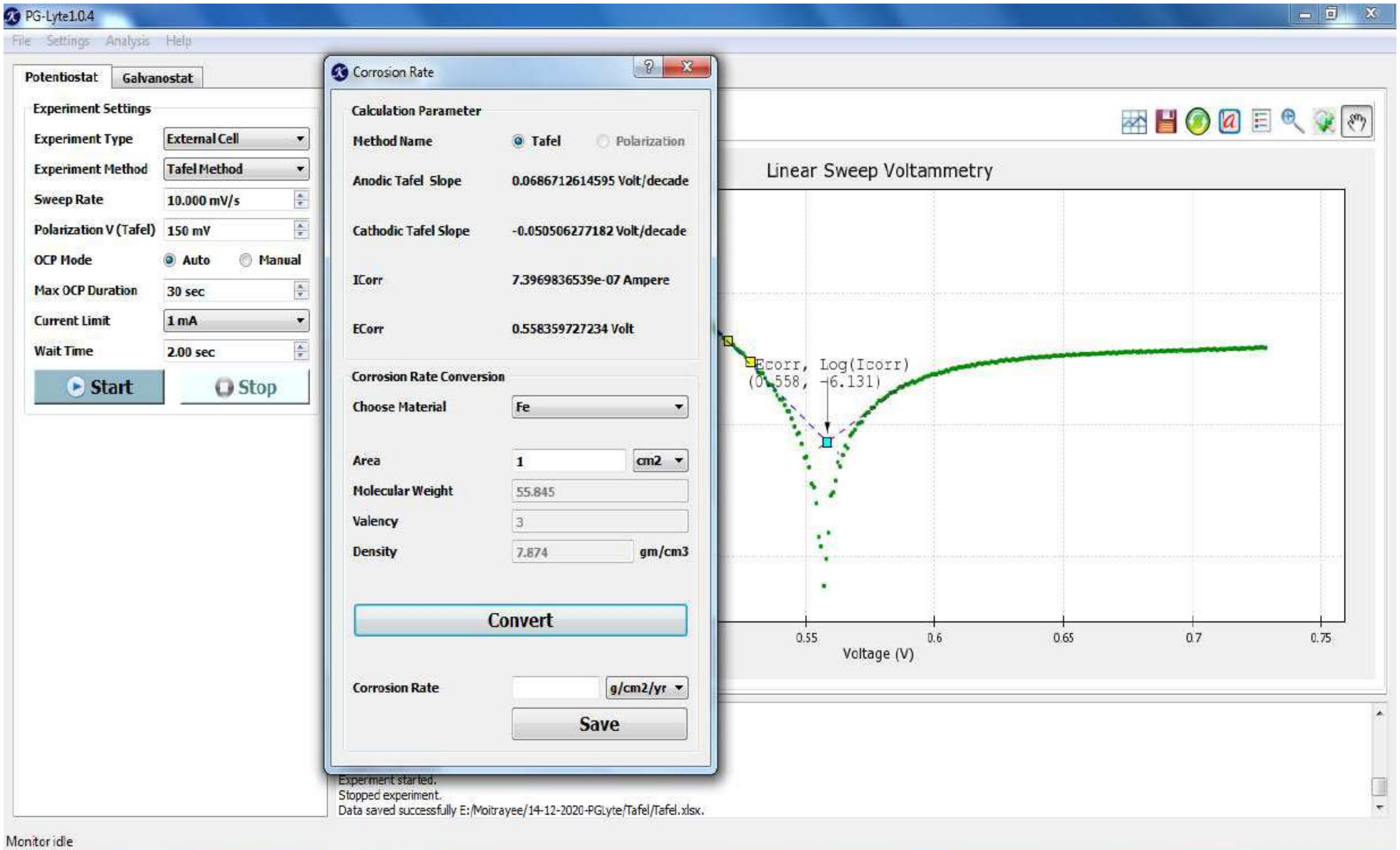

Figure 3C. Calculation of the corrosion rate.

4. Galvanostatic Charge-Discharge

The Galvanostatic Charge/Discharge technique is essential for supercapacitor and battery research. The PG-Lyte 1.0 can perform 10,000cycles with wide potential (+/- 4.9V) and current ranges. The user-friendly software has all the essential parameter setting options to characterize an electrochemical power source effectively.

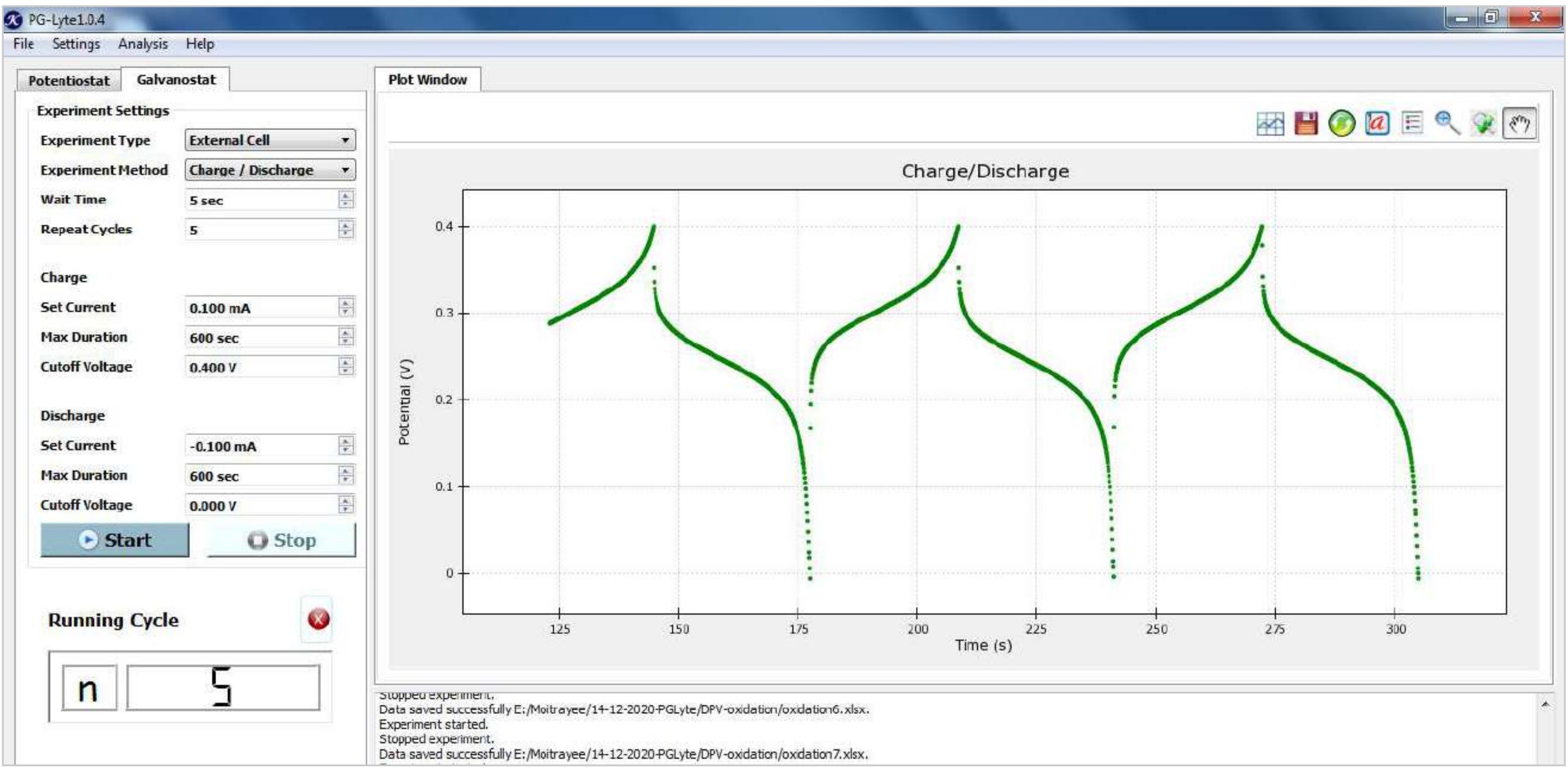

Figure 4. Galvanostatic Charge-Discharge curve for a platinum-wire working electrode in Potassium ferrocyanide-ferricyanide+ potassium chloride solution vs, Ag/AgCl, 3M KCl reference electrode.

This document gives a brief overview of some but not all the techniques offered by PGLyte 1.0. Please feel free to write to us if you need more details about the electrochemical techniques that are already mentioned in this document or any other electrochemical measurement techniques in-build (can be added) with PG-Lyte 1.0 instrument.

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