

APPLICATION NOTE SW-704

# Measurement tools in DropView 8400 and DropView SPELEC

As electrochemical and spectroscopic curves can be very varied, DropView 8400 and DropView SPELEC offer different tools for measurement purposes. In this Application Note, measurement tools ("Automeasurement", "Set on curve measurement", "Set free measurement" and "Set step measurement") are explained in detail.

## INTRODUCTION

Electrochemistry, spectroscopy and spectroelectrochemistry are techniques widely used in multitude fields. However, the curves obtained are very varied and all electrochemical peaks and spectroscopic bands cannot be measured using the same procedures.

This Application Note shows four tools included in DropView 8400 and DropView SPELEC for measuring different curves with different shape. Selection of the suitable procedure can help the measurement process and in that way, it facilitates the analysis of the obtained results.

## INSTRUMENTATION AND SOFTWARE

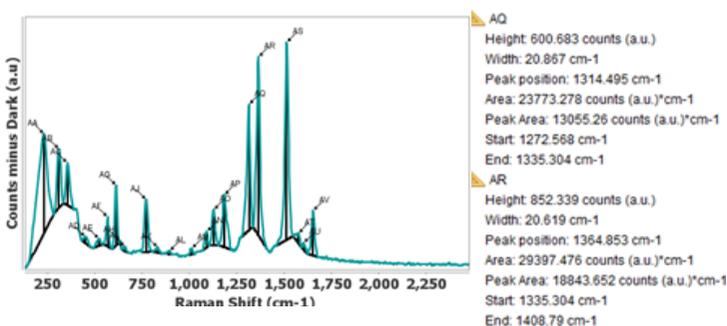
Curves shown in this Application Note are obtained with SPELEC instruments and a portable bipotentiostat/galvanostat  $\mu$ STAT 400 controlled by DropView SPELEC and DropView 8400, respectively. SPELEC instruments are fully integrated equipments available to perform electrochemical, optical and spectroelectrochemical measurements in different spectral ranges. DropView SPELEC is a dedicated software that acquires real-time spectroelectrochemical information and also includes specific tools for data treatment and analysis. DropView 8400 software provides the electrochemical responses as well as it includes different tools for data treatment. In this Application Note, different tools to measure electrochemical and spectroscopic signals will be explained in detail.

## RESULTS

Four tools are implemented in DropView 8400 and DropView SPELEC software to perform measurements in electrochemical and spectroscopic curves.

“Automeasurement” 

“Automeasurement” is a suitable tool implemented to perform automatic measurements on a curve. Applying this tool is as easy as select the electrochemical or the spectroscopic curve in which will be applied and then select the “Automeasurement” tool. Figure 1 shows the result of measuring by “Automeasurement” tool a Raman spectrum. As can be observed, this tool recognizes all bands and displays the information associated with each Raman signal.



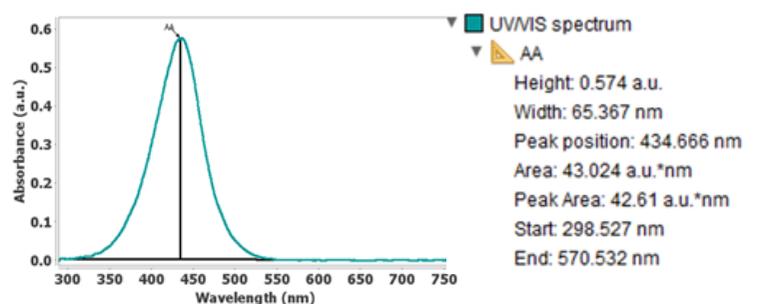
**Figure 1.** Raman spectrum measured by “Automeasurement” default tool and the information related to AQ and AR bands.

Figure 1 shows numerous bands in the spectroscopic curve, but “Automeasurement” tool offers a fast procedure to obtain the information associated with all peaks instead of manually measuring each band one by one.

In addition, “Automeasurement” default configuration can be modified to optimize the automatic measurement according to the shape of the selected curve (Application Note “Automeasurement tool: fast procedure for extracting the information in DropView SPELEC”).

“Set on curve measurement” 

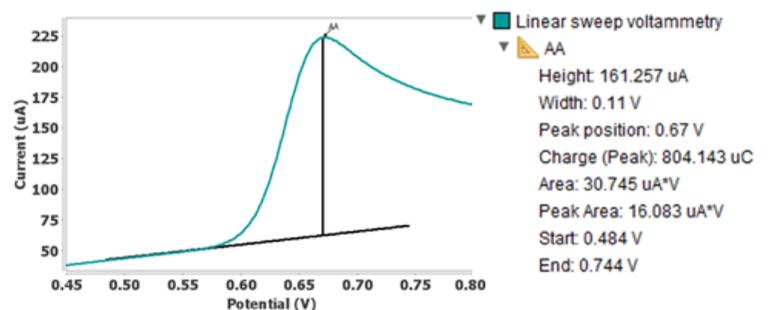
This tool allows measuring the peak between two points selected in the curve. These two points do not need to be precisely define because the tool will automatically search for the nearest point of the curve from the point that has been clicked. In Figure 2 displays a straight line between the two selected points (300 and 550 nm) and a vertical line, wherever the height is maximum of the UV/VIS band, are drawn.



**Figure 2.** UV/VIS band measured by “Set on curve measurement” tool and the information related to this absorption band.

“Set free measurement” 

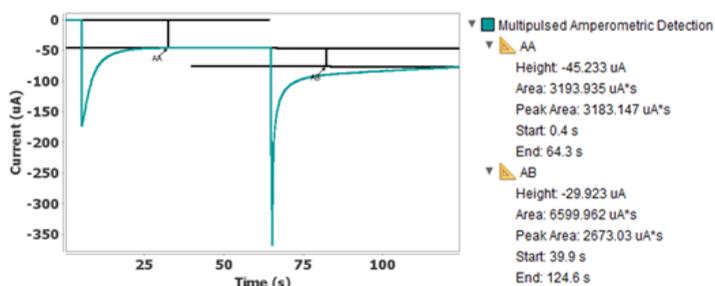
This tool performs the measurement as the “Set on curve measurement” tool but with the difference that the selected points are not automatically adjusted to the nearest points of the curve. In that way, these two points must be precisely define. In Figure 3, the oxidation peak in a linear sweep voltammogram is measured taking into account the correction of the initial capacitive current.



**Figure 3.** Measurement of oxidation peak by “Set free measurement” tool in a linear sweep voltammogram and the information related to this anodic peak.

## "SET STEP MEASUREMENT"

This tool allows to measure "steps" on a curve selecting 3 points on the curve to make the measurement. For the first point, the nearest point of the selected curve will be taken, but the next two points must be precisely selected. As can be seen in Figure 4, "Set step measurement" is applied in the electrochemical response obtained using a Multipulsed Amperometric Detection procedure. This tool draws a straight baseline between the first two points selected, and the third point defines a parallel line respect to the baseline.



**Figure 4.** Measurements performed by "Set step measurement" tool in a multipulsed amperometric detection and the information obtained.

## CONCLUSIONS

DropView 8400 and DropView SPELEC are dedicated software that allow us to monitor electrochemical processes and in the latter case, also optical and spectroelectrochemical events. In addition, they offer interesting tools for data treatment and analysis. In this Application Note, tools focused on the measurement of electrochemical and optical curves are explained with several examples. "Automeasurement", "Set on curve measurement", "Set free measurement" and "Set step measurement" offer different procedures, allowing us to select the particular tool that provides the most accurate measurement of each curve.

**Method:** Electrochemistry,  
Spectroelectrochemistry  
**Industry:** R&D