

## DIFFERENCE BETWEEN 2-POINT AND 4-POINT MEASUREMENT IN BATTERY STUDIES

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OrigalyS is a high-tech company based in Lyon who designs high quality and sustainable instruments in electrochemistry.

Our mission is also to communicate on the best practice in electrochemistry.

This work aims to show the difference between 2-electrode and 4-electrode measurements in electrochemical research, especially in energy storage. The 4-electrode configuration is used by most research without even knowing why it impacts their results.

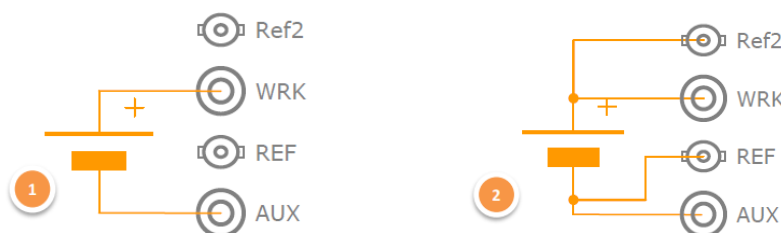


Figure 1: the difference between a 2 and 4-electrode measure

In galvanostatic mode, the charge/discharge curves will differ between measurements with 2 and 4 electrodes. The Nyquist curve allows us to conclude that the resistance of the electrochemical cell is reduced with 4 electrodes.

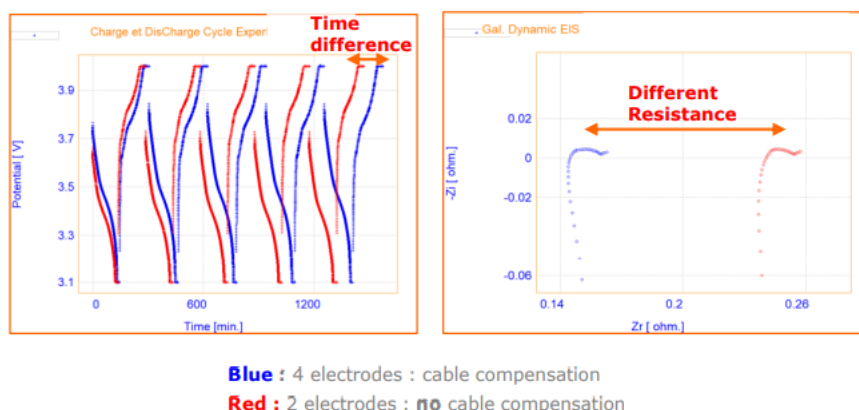


Figure 2: charge/discharge and impedance curves of Li-ion battery

We will also investigate in this presentation some key analysis in photovoltaic such as EIS, Mott-Schottky and IV characterization.