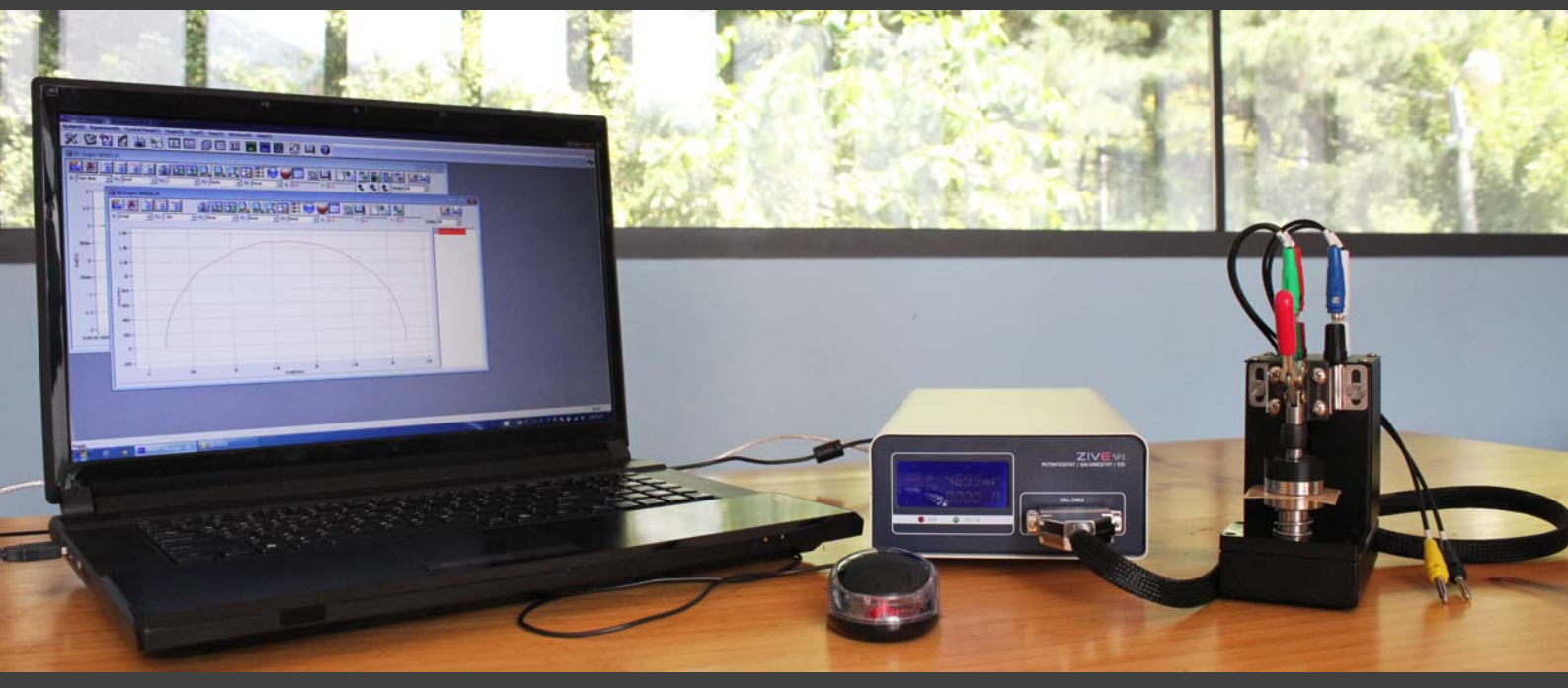
MCJ1

Through-Plane Conductivity Test Jig



Because the conductivity of a material is directly linked with ohmic losses, the measurement of ionic conductivity is crucially important in order to evaluate the performance of a newly synthesized material such as ion exchange membrane(IEM) and proton exchange membrane(polymer electrolyte membrane, PEM).

Today ion exchange membranes are receiving considerable attention and are successfully applied for desalination of sea and brackish water and for treating industrial effluents. And proton exchange membrane(PEM) is one of the key components for various consumer related applications for fuel cells, e.g. automobiles, back-up power, portable power etc.

For example, in PEMs, protons can transport in two directions, across the membrane and through the membrane. This results in two conductivities, in-plane conductivity and through-plane conductivity. For PEM fuel cells, through-plane conductivity measurement is more measningful than in-plane because proton transfer occurs in the through-plane direction.

The conductivity of the membrane can be caluculated based on the measured resistance by the following equation:

$$\sigma = \frac{L}{RWT}$$

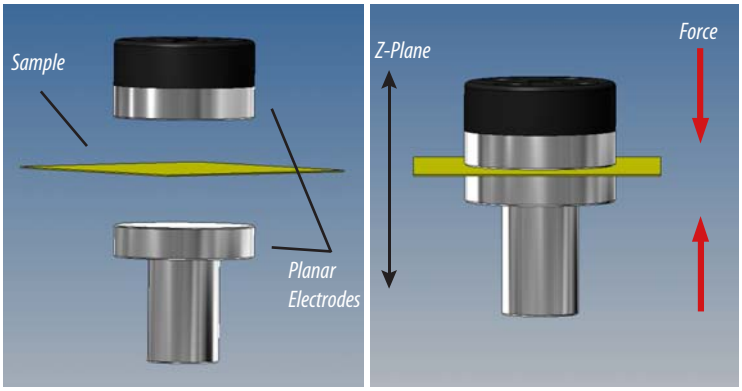
where σ is the membrane conductivity(S/cm), L is the length between the electrodes, R is the measured resistance, W is the membrane width, and T is the membrane thickness.

MCJ1 Through-Plane Conductivity Test Jig

The MCJ1 Through-plane conductivity test jig helps user to setup a 2-probe electrochemical cell consisting of 2 stainless steel probes that sandwiches the membrane to measure through-plane conductivity of membranes. The MCJ1 is designed to hold a membrane by pulling a lever.

Normally, a number of galvanostatic alternating current(AC) electrochemical impedance spectroscopic (EIS) techniques or DC techniques are used to estimate the membrance conductivity. User can set up a perfect system with one of ZIVE series Electrochmical Workstation with MCJ1 conductivity test jig for through-plane conductivity measurements.

MCJ1 (Through-Plane Conductivity Test Jig)



Applications

- Polymer Electrolyte Membrane(PEM) for Fuel Cell
- Ion Exchange Membrane for Redox Flow Battery
- Water Softening/Water Purification/Water Treatment
- Desalination
- Ion Separation, etc.

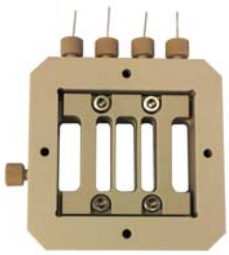
Specifications

Measurement type	through-plane
Sample size	>30mm diameter
Sample thickness	max. 40mm
Sample contact material	304 stainless steel
Operating temperature	up to 60˚C (70˚C upon request)
Overall dimensions	70 x 135 x 174 mm(WxDxH)
Connection	4mm banana plug

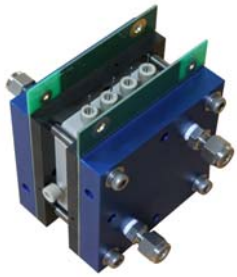
All specifications are subject to change without notice.

Related Product

- Membrane Conductivity Cell(MCC)
  - designed to measure ionic conductivity by simply loading a membrane into cell hardware fixture
  - 4 point probe type
  - material
    - cell body : PEEK
    - wire : platinum
  - operating temperature : to 130˚C
  - fuel cell hardware available : 5, 9 and 25 cm^2 fuel cell test hardware fixture
    - not included, provided by WonATech



MCC(Membrane Conductivity Cell)



MCC with fuel cell hardware fixture

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