Discover the ECAT-packages

Total solutions for electrocatalysis research

These packages offer a total solution for the experimental needs of electrocatalysis researchers.
Two options, ECAT-Compact and ECAT-Complete, are now available.
Each package consist of a bipotentiostat, a rotating ring disk electrode setup, a complete electrochemical cell, and powerful NOVA software to control all components of the system.

Typical applications

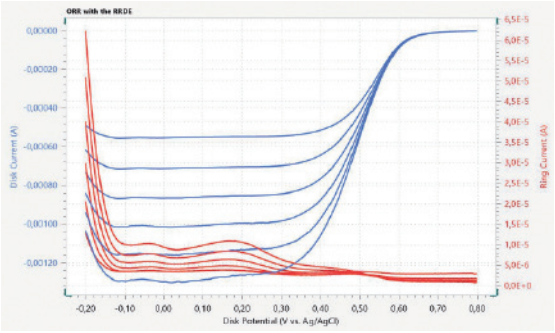
- Electrocatalyst material testing
- Mechanistic information: detection of intermediates via collection and shielding experiments (RRDE)
- Electrochemical kinetics studies
- Mass-transport properties with forced convection condition

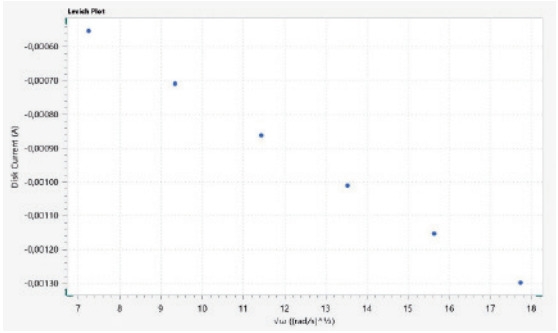
Key features

- Accurate and reliable electrochemical instrumentation
- Powerful NOVA software featuring built-in Levich and Koutecký-Levich analysis methods
- High precision and ultra-low noise electrode rotation from 100 to 10,000 RPM
- RRDE cell designed for the experimental needs of electrocatalysis researchers

3 year
instrument warranty

Metrohm
Autolab





Bipotentiostatic measurements in hydrodynamic conditions: Oxygen reduction reaction with the RRDE

ECAT-Complete

For versatile electrocatalysis research with superior experimental capabilities

- Autolab PGSTAT302N loaded with additional functional modules
- Dual-mode bipotentiostat
- EIS and true linear voltammetry
- Unitrode pH and temperature sensor
- RRDE rotator with GC/Pt electrode tip
- Complete RRDE electrochemical cell
- NOVA electrochemical software

ECAT-Compact

For high-quality standard measurements including those under forced convection conditions

- Autolab PGSTAT204 with bipotentiostat module
- Dual-mode bipotentiostat
- RRDE rotator with GC/Pt electrode tip
- Complete RRDE electrochemical cell
- NOVA electrochemical software

References

http://www.metrohm.com/applications

- **AN-EC-11** – Investigation of intermediates in the electrodeposition of copper using the Autolab RRDE
- **AN-EC-14** – Oxygen reduction reaction with the rotating ring disk electrode

Experimental method

- Four-electrode setup (Pt disk/Pt ring)
- Excess of reactant (O2 gas) in the electrolyte
- The electrode tip rotated at several rates
- NOVA software couples the control of the bipotentiostat and the electrode rotator
- Disk – LSV is applied from zero overpotential to a mass-transport limiting potential region
- Ring – The potential is fixed at a value where the product or intermediate will react

Data and analysis

- The hydrodynamic analysis command in NOVA software generates Levich and Koutecký-Levich plots from the disk electrode current.
- The researcher specifies a fixed potential value at which the data is chosen for these plots.
- Linear regression is applied to each plot.
- Kinetic rate constant for the reaction, the diffusion coefficient for the reactant or the number of electrons transferred can be calculated based on Levich and Koutecký-Levich theory.

Dedicated to research

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