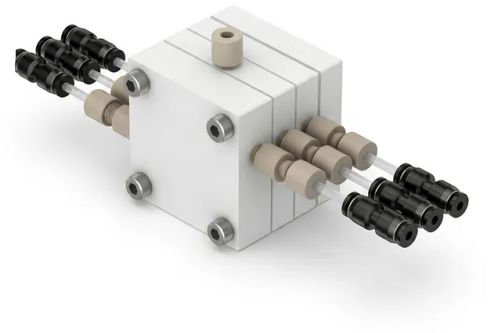
Gas Diffusion Electrode Electrolytic Cell Electrochemical Flow Cell

Item Number: PL-DJ35



Introduction

High performance three chamber gas diffusion electrode electrolytic flow cell engineered for advanced electrocatalysis applications. Featuring precision machined PTFE and PMMA construction with customizable chamber volumes to optimize mass transfer and current density during continuous lab research.

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Application	Description	Key Benefit
Carbon Dioxide Reduction (CO2RR)	Converting gaseous CO2 into valuable chemical feedstocks (carbon monoxide, ethylene, formic acid) using gas diffusion electrodes to bypass low solubility issues in aqueous solutions.	Drastically increases current density and selectivity by maintaining a continuous, high-concentration gaseous reactant feed at the triple-phase boundary.
Nitrogen Reduction Reaction (NRR)	Electrocatalytic synthesis of ammonia from nitrogen gas under ambient temperatures and pressures, as a clean alternative to the traditional Haber-Bosch process.	Minimizes mass transfer bottlenecks of nitrogen gas, allowing stable, high-throughput catalytic evaluation of novel transition metal catalysts.
Oxygen Reduction & Fuel Cells	Testing catalytic performance of active layers for oxygen reduction reactions (ORR) and proton exchange membrane fuel cells (PEMFC) under continuous flow conditions.	Provides realistic operational simulation of fuel cell assemblies with uniform current distribution and precise control over gas and liquid flow rates.
Organic Electrosynthesis	Performing selective synthetic organic electrochemical transformations where gaseous reactants or co-reactants are directly introduced to liquid phase media.	Facilitates highly controlled, continuous-flow organic synthesis, reducing reaction times and enhancing product yield compared to batch electrochemical cells.
Chlor-Alkali Simulation	Simulating industrial chlor-alkali processes or high-performance water electrolyzers in a laboratory environment to evaluate membrane stability and cell voltage.	Excellent thermal and chemical resistance permits long-term, high-voltage testing under realistic corrosive conditions with minimal system maintenance.
Electrocatalyst Screening	High-throughput testing of newly synthesized catalyst formulations on gas diffusion substrates to determine long-term durability and electrocatalytic efficiency.	Accelerated testing protocol support due to standard modular components, enabling rapid sample swap-out and consistent cell compression across different runs.

Specification Parameter	PL-DJ35-PMMA (Acrylic/Plexiglass)	PL-DJ35-PTFE (Fluoropolymer)
Product Model Number	PL-DJ35-PMMA	PL-DJ35-PTFE
Body Material	Polymethyl Methacrylate (PMMA)	Polytetrafluoroethylene (PTFE)
Configuration Type	3-Chamber (Gas, Cathode, Anode)	3-Chamber (Gas, Cathode, Anode)
Standard Chamber Dimensions	10 mm × 10 mm × 10 mm / 20 mm × 20 mm × 10 mm	10 mm × 10 mm × 10 mm / 20 mm × 20 mm × 10 mm
Chamber Customization	Fully Supported (custom volume/shape)	Fully Supported (custom volume/shape)
Liquid Inlet/Outlet Tubing Port	3 mm	3 mm
Reference Electrode Port	4 mm	4 mm
Gas Diffusion Electrode (GDE)	User-provided (isolated via mechanical seal)	User-provided (isolated via mechanical seal)
Separation Membrane	User-provided (isolated via mechanical seal)	User-provided (isolated via mechanical seal)
Operating Temperature Limit	Up to 60°C	Up to 120°C

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Chemical Resistance	Dilute acids/bases, neutral salt solutions	Universal chemical resistance to hot acids/alkalis
Optical Clarity	High visual transparency	Opaque (milky white)