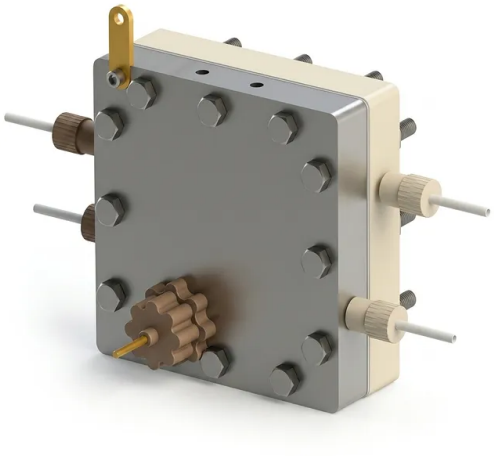
Membrane Electrode Assembly Electrolyzer Cell With Non Metallic Peek Cathode And Titanium Anode

Item Number: PL-DJ27



Introduction

Optimize laboratory research with this advanced zero gap membrane electrode assembly electrolyzer cell featuring a premium non metallic PEEK cathode and high purity titanium anode ideal for high efficiency carbon dioxide reduction at industrial current densities today.

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Application	Description	Key Benefit
Carbon Dioxide Reduction (CO2RR)	Utilizing the zero-gap structure to reduce gaseous carbon dioxide into valuable C1/C2 chemicals (such as carbon monoxide, formic acid, or ethylene) at high current densities.	Eliminates mass transport limitations and minimizes ohmic losses, enabling stable operation above 300 mA cm^{-2} to mimic industrial output.
Proton Exchange Membrane (PEM) Electrolysis	Evaluating anode and cathode catalyst coatings, membrane durability, and water split efficiency under acidic conditions.	The high-purity titanium anode resists extreme acidic and oxidizing potentials, preventing degradation and ensuring reliable long-term testing.
Anion Exchange Membrane (AEM) Electrolysis	Investigating hydroxide transport, non-noble metal catalyst performance, and system stability under highly alkaline environments.	The non-metallic PEEK cathode provides excellent chemical inertness against concentrated alkaline solutions, protecting the system from chemical attack.
Electro-Organic Synthesis	Performing complex organic synthesis reactions, including the electrochemical reduction of organic acids or oxidation of biomass-derived alcohols.	The modular design allows for the easy swapping of carbon paper, metal foams, and custom electrode terminals to tailor to specific reaction parameters.
Thermal & Thermodynamic Analysis	Running electrolysis reactions at elevated temperatures to study kinetics and thermodynamic energy efficiency.	Built-in φ4mm heating rod and thermocouple ports allow real-time thermal monitoring and direct heat application, maximizing reaction rates.
Gas Diffusion Layer & Catalyst Studies	Subjecting different gas diffusion layers (carbon papers, titanium meshes, metal foams) to accelerated degradation tests under high current stress.	The heavy-duty, uniform bolt clamping system ensures repeatable electrical contact pressure, isolating degradation to the target material.

Technical Parameter	Specification Detail (Model: PL-DJ27)
Cathode Plate Material	PEEK (Polyetheretherketone) - Non-metallic
Anode Plate Material	High-Purity Titanium (Ti)
Flow Field Geometry	Precision CNC-Machined Serpentine Flow Channel
Active Flow Channel Area	50 mm × 50 mm (Customizable to user specifications)
Cathode Conductive Terminal	Replaceable Titanium Electrode
Anode Conductive Terminal	Gold-Plated Copper (Cu)
Anode Integration Ports	Standard φ4 mm Heating Rod Hole & Standard φ4 mm Thermocouple Hole
Cathode Gas Diffusion Medium	Standard Carbon Paper
Anode Diffusion Medium Compatibility	Carbon Paper / Titanium Oxide / Metal Foam
Fluid Interface Connections	Cathode Outlet, Anode Inlet, Anode Outlet

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Sealing System	High-Performance Chemical-Resistant Gaskets
Max Operating Current Density	>300 mA cm^{-2} (Depending on membrane/catalyst)
Clamping Assembly	High-Tensile Stainless Steel Bolts