

High Transmittance All Quartz Photoelectrochemical Cell With Sealed Ptfе Lid And Flange Design

Item Number: PL-DJ14



Introduction

Optimize your photoelectrochemical research with this premium high-transmittance all-quartz photoelectrochemical cell, featuring a hermetically sealed PTFE lid, flange-locked compression sealing, and glue-free fusion welding to ensure absolute, leak-free experimental reliability during critical solar energy and catalysis testing protocols.

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Application	Description	Key Benefit
Photocatalytic Water Splitting	Testing and characterizing semiconductor photoanodes and photocathodes for hydrogen and oxygen evolution under simulated sunlight.	Glue-free design prevents trace organic contamination, ensuring accurate faradaic efficiency and clean gas chromatography readings.
Solar Fuel Synthesis / CO ₂ Reduction	Conducting photoelectrochemical reduction of carbon dioxide into carbon monoxide, methane, or liquid fuels using gas-tight purging setups.	Absolute hermetic flange sealing prevents ambient CO ₂ ingress and retains highly volatile reaction gases for precise quantification.
Photoelectrocatalytic Pollutant Degradation	Investigating the degradation kinetics of organic pollutants, dyes, and industrial wastewater components on light-active catalyst surfaces.	Over 95% UV-Vis light transmittance ensures full illumination of the catalyst surface, generating reliable reaction rate constants.
Advanced Semiconductor Characterization	Performing Mott-Schottky analysis, linear sweep voltammetry, and transient photocurrent measurements on novel photoactive materials.	High optical clarity minimizes incident light loss, ensuring highly repeatable photocurrent density-to-voltage curves.
Light-Driven Organic Synthesis	Running multi-phase photoelectrochemical organic synthesis reactions requiring high solvent stability and strict temperature/atmosphere control.	Chemically inert PTFE lid resists swelling and degradation when exposed to harsh organic solvents and highly reactive intermediates.
Solar Cell Stability Testing	Evaluating the long-term chemical and electrochemical degradation mechanisms of dye-sensitized or perovskite solar cells under constant illumination.	Robust fusion-welded quartz structure provides consistent physical dimensions and optical paths over hundreds of hours of continuous testing.

Parameter / Component	Specification Detail
Model Item Number	PL-DJ14
Cell Body Construction	All-Quartz (High-Purity Fused Silica)
Welding Method	Glue-free high-temperature fusion welding (No chemical adhesives)
Optical Transmittance	≥ 95% (across visible and UV-Vis spectrum)
Lid Material	Precision-machined Polytetrafluoroethylene (PTFE)
Sealing Design	Heavy-duty quartz flange with compression locking ring and O-ring
System Hermeticity	Absolute sealed system (Gas-tight)
Electrode Interface	Internal plug-and-play headphone jack connectors on lid
Compatible Reference Electrode	Ag/AgCl Reference Electrode (Ø 3.8 mm)
Compatible Counter Electrode	Ø 0.5 mm Platinum Wire or Platinum Plate Electrode

Parameter / Component	Specification Detail
Compatible Working Electrode	Glassy Carbon Electrode, Ø 3 mm Gold Disk, Ø 3 mm Platinum Disk, or customizable specimen clamps
Gas Purge Integration	Optional gas inlet and outlet needle valves / ports
Customization Support	Available for lid ports, cell volume, and special electrode mounting geometries