

# Optically Transparent Thin Layer Spectroelectrochemical Cell For In Situ Uv Vis Nir Spectroscopic Analysis

Item Number: PL-DJ12



## Introduction

Perform highly precise in-situ UV-Vis and NIR spectroelectrochemical analysis with this optically transparent thin-layer cell featuring high-purity quartz construction, a chemically inert PTFE cap, and precision integrated electrodes designed to deliver rapid, uniform sample electrolysis for advanced laboratory research applications.

[Learn More](#)

Application	Description	Key Benefit
Electrocatalyst Evaluation	In-situ monitoring of active catalyst surfaces during oxygen reduction (ORR) or hydrogen evolution reactions (HER).	Enables real-time correlation between potential-driven structural shifts and catalytic reaction rates.
Redox Polymer Studies	Tracking spectral changes in electrochromic and conducting polymers during doping and dedoping cycles.	Delivers precise optical density profiles linked directly to specific oxidation and reduction potentials.
Organometallic Characterization	Investigating oxidation states and charge-transfer kinetics in transition metal complexes and coordination compounds.	Facilitates fast, uniform electrolysis to isolate and identify transient radical intermediates.
Battery Material Analysis	Analyzing chemical changes within liquid battery electrolytes and electrode interfaces during simulated charging cycles.	Provides deep diagnostic insight into electrolyte degradation pathways and solid-electrolyte interphase kinetics.
Bioelectrochemistry Research	Evaluating redox behavior in proteins, enzymes, and cellular electron transport systems under controlled potentials.	Minimizes denaturation risks with highly biocompatible, bio-inert quartz and fluoropolymer materials.
Dye & Pigment Development	Studying color shifts, degradation paths, and degradation mechanisms of synthetic dye molecules in organic solutions.	Delivers high-precision absorption profiles across a wide wavelength range under continuous voltage control.

Parameter	PL-DJ12 Specification Detail	Options / Remarks
Standard Optical Path Length	1.0 mm	Optional 0.5 mm or 0.2 mm thin-layer inserts available
Outer Cuvette Dimensions	12.5 mm × 12.5 mm × 45.0 mm	Standard footprint for universal cell holders
Spectral Range	200 nm to 2500 nm	Far-UV Quartz (JGS1 equivalent) window material
Working Electrode (WE)	Gold Mesh (99.99% purity)	Interchangeable with Platinum Mesh or ITO Glass
Counter Electrode (CE)	Platinum Wire (Ø 0.5 mm × 50 mm)	Integrated pre-aligned port
Reference Electrode (RE)	Miniature Ag/AgCl Electrode (Ø 2.0 mm)	Saturated KCl type, low-leakage design
Cap / Lid Material	Virgin High-Purity PTFE	Custom multi-port CNC machined configuration
Active Electrolysis Volume	0.8 mL to 1.5 mL	Minimizes consumption of precious target compounds
Chemical Compatibility	Universal (Agonistic Solvents, Acids, Bases)	Zero-swelling fluoropolymer and quartz construction
Operating Temperature	-20°C to +120°C	Robust seal integrity across thermal boundaries