Olis DSM 17 CD Spectrometer

Employing the premium Cary 17 prism+grating monochromator for wide spectral range scanning with no user intervention.

Automatic slit and detector adjustments make this the model of choice for laboratories working with a host of sample types and/or requiring various span ranges.

Applications:

Protein Secondary Structure analysis

Protein Folding

Nucleic Acid, RNA, DNA studies

All macromolecules with chiral signals

Upgradeable to Support:

NIR scanning to 2600 nm in absorbance, fluorescence, CD, and all secondary modes

Thermal studies with single or multiple position Peltier cell holders

CD Stopped-flow

Magnetic CD using tiny 1.4 Tesla permanent magnet

Fluorescence Detected CD

Circularly Polarized Luminescence

Dual beam absorbance and UV/Vis stopped-flow

Scanning fluorescence and fixed wavelength emission stopped-flow

Benefits of the Olis Product:

All benefits of other Digital Subtractive Method models: absolute CD, no potential for user introduced error, and so on.

Olis SpectralWorks software for collection and analysis of single and multiple wavelength data sets

Four public domain algorithms for protein secondary structure determination are included in the Olis SpectralWorks software

Technical Specifications:

- Direct acquisition of abs(L) and abs(R)
- Single and Dual Beam absorbance and circular dichroism
- Standard range of 185-800 nm, extendible into the NIR
- No calibration. No drift. Flat baseline.
- Linearity over 5 orders of magnitude
- Collection rates to 1000 points per millisecond
- Time-tested premium prism+grating Cary 14 (or 17) monochromator
- Ozone producing 150W Xenon arc lamp in an elliptical housing; substitution with other source easily implemented by Olis staff or laboratory members
- Cylindrical & rectangular cuvette holders (jacketed or Peltier)

Olis DSM 17 CD Specifications

Features	DSM 17
Means of acquiring CD information	Digital: the absorption for each rotation of light is measured; the measurement for right circularly polarized light is directly subtracted from the measurement for left circularly polarized light. CD = abs(L) - abs(R)
Calibration against a standard	Not required, because DSM collects CD rather than calculating it as K(IAC/IDC)
Lock-In Amplifier	Not Used
Light Source	Xenon arc, 150 Watt ozone or non-ozone producing
Spectral Range	185-800 nm standard, 185-1700 nm optional with InGaAs detection
Mechanical Range	185-2600 nm
Interrogation Method	Dual beam with 2 beams 180° out of phase with each other ("phase coherent" constantly modulating left/right, right/left)
Mode of detection	Two PMTs, UV/Vis optimized; NIR available with InGaAs; option of photon counting for fluorescence and CPL
Dispersive elements	Prism + grating
Number of scans per second	Less than 1
Kinetic fitting methodology	**Global fits** using Matheson's Simplex Method and Matrix Exponentiation
Secondary Structure Determination	Four commonly used algorithms are incorporated into the Olis software
Slew rate	2000 nm/minute
Scan Rate	**Entirely variable, up to 2000 nm/minute**, with the speed being determined by the difficulty of the measurement. Typical CD measurement in the UV is 10 nm/minute.
Wavelength accuracy	<0.05 nm to 800 nm
Slits	Automatic and continuously variable from 0-3 mm to provide constant bandpass
Spectral bandpass	Automatic and continuously variable up to 20 nm
Modulator	50 kHz
Autoscale	Arbitrary
RMS noise	Measured without sample, 3 nm bandpass, ~3 sec integration time: 0.02 m° at 185-200 0.01 m° at 220 and up
Baseline stability	**<0.1 m° per day**
Integration time	**0.001 to 64,000 seconds per datum**
Absorption range	0-3 OD, without additional filters
Absorbance mode	**Dual beam**
Upgradable to fluorescence	Yes, including options of emission scanning, fixed wavelength, photon counting, and FT-Vis
Upgradable to CPL& LD	Yes
Nitrogen consumption	Startup, 24 L/minl <190 nm, 15 L/m 190-250 nm, 7 L/m<250 nm, 4-6 L/m. Separate flow valves to lamp housing, monochromator, and sample compartment.