

Components

CoolSpeK main body	1	Standard accessories
Temperature controller	1	A silicon tube (phi 5 x phi 9, 3m) 1
Liquid nitrogen reservoir	1	Tube sets for gas flow
*cuvette is not supplied		(A urethane tube, Connector of taper pipe threads, Flow valve)
		Tool kit
		User's manual

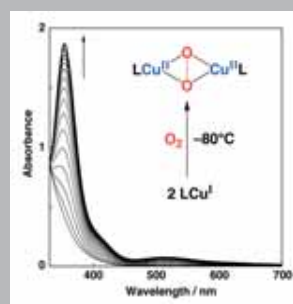
Outer size of the CoolSpeK main body (without options)
162.5mm (Height) x 90mm (Width) x 111mm (Length)

Specifications

Liquid nitrogen reservoir	: Stainless, 2 Litre
Low-temperature sample chamber	: Aluminum, polyurethane foam for thermal insulation
Optical windows	: Quartz, Three-way
Suitable cell	: Outer dimension of 12.5mm x 12.5mm
Temperature control	: Regulation of liq.N ₂ flow
Temperature range	: (standard) -80 degC to room temperature (optional) -80 degC to 100 degC
Volume of Liq.N ₂ consumption	: 1Litre/hour
Precision of temperature control	: Plus minus 1 degree or plus minus 0.5% of indication value, which is greater (error of the sensor not included)
Quantity of dew condensation	: Less than 0.1OD/hour at -80 degC with Unisoku spectrophotometer
Temperature sensor	: Resistance thermometer sensor (Pt-100 Class B)
Functions	: There are two built-in heaters in the main body. One is for prevention of dew condensation on optical windows. Another is for temperature control.
System electronics	: AC100V 1A (Transformer will be provided accordance with the voltage of each countries.)

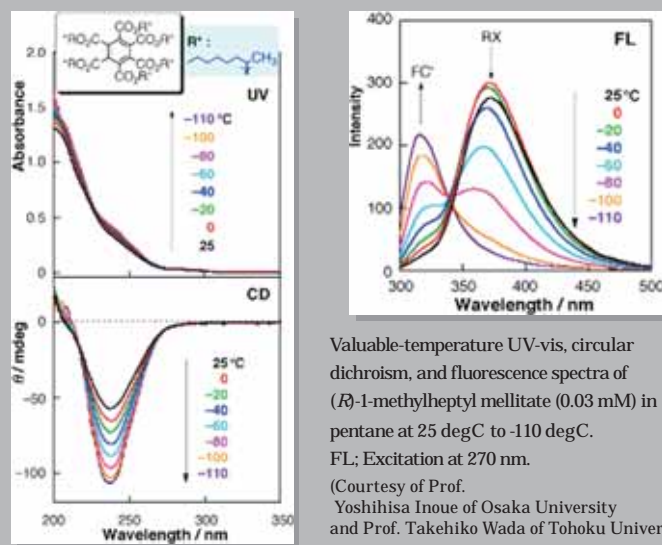
Application Examples

Time-dependent UV-vis Spectra



Spectral changes for the reaction of O₂ and a Cu(I) complex at -80 degC. Formation of a m- peroxo dinuclear copper(II) complex can be easily monitored by the time-dependent UV-vis spectrum at low temperature. (Courtesy of Prof. Shinobu Itoh of Osaka University)

Variable-temperature UV-vis, CD, and fluorescence spectra

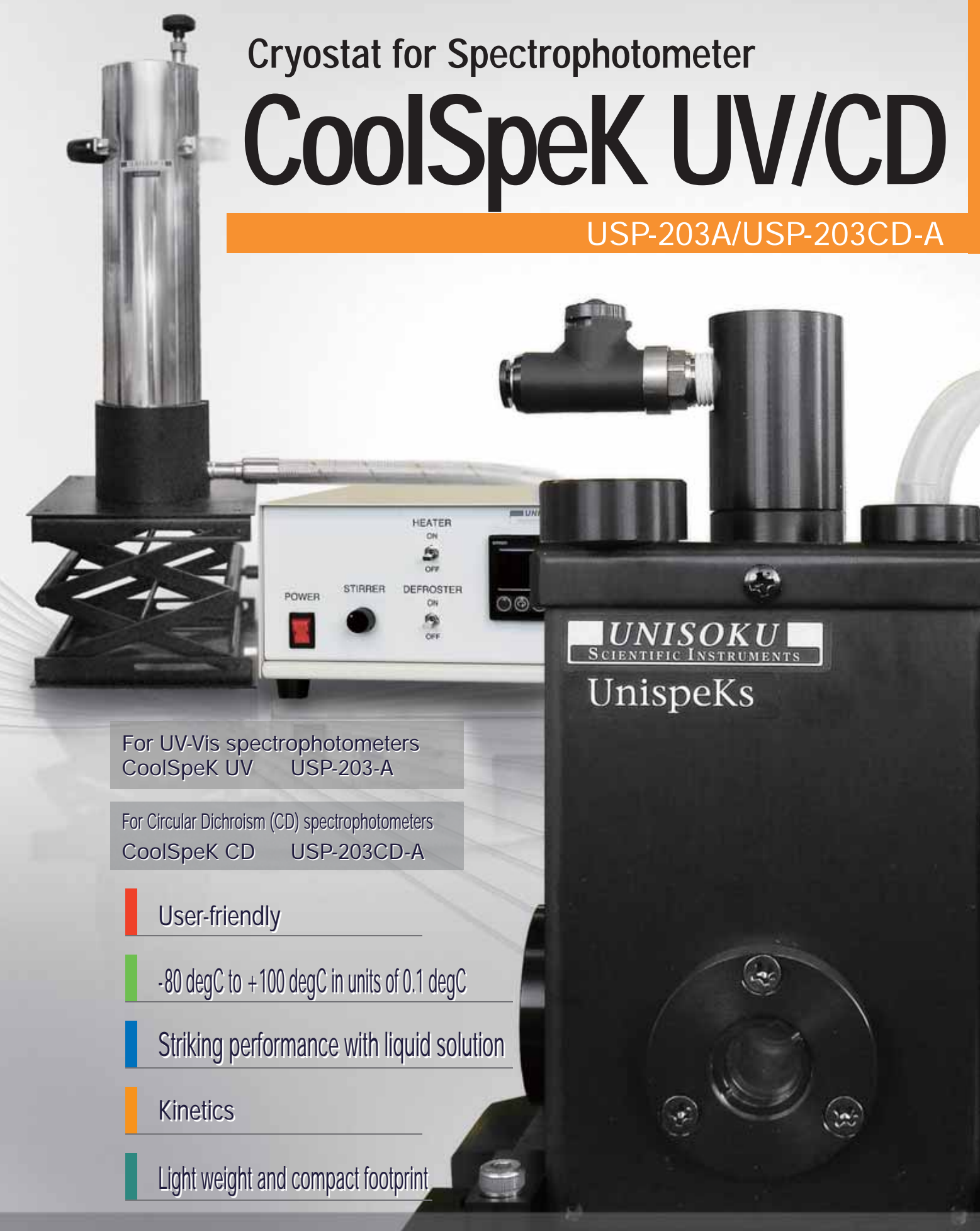


Valuable-temperature UV-vis, circular dichroism, and fluorescence spectra of (R)-1-methylheptyl mellitate (0.03 mM) in pentane at 25 degC to -110 degC. FL; Excitation at 270 nm. (Courtesy of Prof. Yoshihisa Inoue of Osaka University and Prof. Takehiko Wada of Tohoku University)

Cryostat for Spectrophotometer

CoolSpeK UV/CD

USP-203A/USP-203CD-A



For UV-Vis spectrophotometers
CoolSpeK UV USP-203-A

For Circular Dichroism (CD) spectrophotometers
CoolSpeK CD USP-203CD-A

User-friendly

-80 degC to +100 degC in units of 0.1 degC

Striking performance with liquid solution

Kinetics

Light weight and compact footprint

This cryostat CoolSpeK enables you to easily obtain spectra and chemical kinetics rate under low-temperature condition.

Features

CoolSpeK is attached with a sample compartment of commercial UV-Vis or fluorescence spectrophotometers by using an adaptor.

Various kinds of options are supplied for customer's requirements.

Chemical kinetics

CoolSpeK is able to measure a chemical reaction process by dropping solution and a magnetic stirrer (Option).

User-friendly

CoolSpeK doesn't require vacuum pumps, and can be used at atmospheric pressure. This equipment cools your sample to low temperature by flowing liquid N₂ from a reservoir, and controls the temperature precisely by auto regulating of the flow.

Low dew condensation

Special structure and heating function prevent dew condensation.
*Quantity of dew condensation: Less than 0.05OD/hour at -80 degC with Unisoku spectrophotometer, after baking processing

Temperature range -80 degC~ room temperature ~ 100 degC

(Standard) -80 degC ~ room temperature
(Optional) -80 degC ~ 100 degC

A lot of shipment volume

Over 100 sets were already shipped globally.

Light weight and compact footprint

CoolSpeK main body is compact and it can be placed inside of sample compartments of commercial UV-Vis or fluorescence spectrophotometers by using adapters. Cuvettes with cap for spectrophotometers can be used for this cryostat.

* The lid of sample compartments in some spectrophotometers may not be shut when is attached the cryostat.

Variety of Options

There are a lot of options. Magnet stirrer, high temperature control, various base adaptors, cuvette adaptor, solid sample holder, and so on.

OPTION

Magnetic stirrer (No.CS-ST)

This is attached on the bottom of CoolSpeK main body. The spin speed is controlled by the controller.

* This magnetic stirrer cannot be attached with some spectrophotometers.

High temperature control (No.CS-HT)

This controls the temperature from room temperature to 100 deg C

Standard Cuvette (No.CS-CL-U1)

Four-side transparent quartz cuvette with a screw cap (light path length: 10mm)

Magnetic stirring bar (No.CS-SB)

This is used in the Standard Cuvette (No.CS-CL-U1). Specified Tolerance of Teflon® Walls High Strength Magnetization

Adaptor for 1 mm light path length cell (No.CS-CL-H1)

This adaptor fills a gap between the cuvette and the cryostat internal body. A spring in the adaptor makes thermal conduction better. Adaptor for 2 mm light path length cuvette is also available.

Adaptor for 1 mm light path length cuvette (for fluorescence) (No.CS-CL-F1)

This adaptor enables you to acquire the surface fluorescence of samples with high absorption in 1mm light path length cuvette.

Solid sample holder (for transmittance) (No.CS-KT-H5-15)

Suitable sample: a solid sheet or powder
Suitable dimension: phi 10mm or 10mmx10mm, Thickness: 0.5-1.5mm
Please contact us if your sample dimension is not above one.

Solid sample holder (for fluorescence) (No.CS-KF-H5-20)

Suitable sample: a solid sheet or powder
Suitable dimension: 13mmx13mm, Thickness: 0.5-2.0mm
Please contact us if your sample dimension is not above one.

Systems interfaceable with USP-203-A

Unisoku Stopped-flow Rapid-scan RSP-1000
Agilent 8453-Series Diode Array Spectrophotometer
Beckman DU-7400 Spectrophotometer
Edinburgh Instruments Fluorescence Spectrometer
JASCO Spectrophotometer V-550/560/570 V-650/660/670
JASCO Fluorescence Spectrophotometer FP-6500
JASCO Circular Dichroism Dispersion Measurement System J-720/820
Hewlett-Packard HP8453-Series Diode Array Spectrophotometer
Hitachi Spectrophotometer U-3500

Hitachi Fluorescence Spectrophotometer F-4500
Shimadzu Spectrophotometer UV-3000/3150/3600
Shimadzu Spectrophotometer UV-2400/2450/2550
Shimadzu Fluorescence Spectrophotometer RF-5300*(1)
Varian Spectrophotometer Cary50
* In some spectrophotometers, room light may get into detectors when the cryostat is attached.
* Please contact us if your spectrophotometer is not listed above.
*(1) Magnetic stirrer (No.CS-ST) can not be installed for RF-5300.