Components

- CoolSpeK main body: 1
- Temperature controller: 1
- Liquid nitrogen reservoir: 1
- *Cuvette is not supplied

Standard accessories:
- A silicon tube (60 x 9, 3m) 1
- Tube sets for gas flow
- (perylene tube, connector of taper pipe threads, flow valve)
- Tool kit
- User’s manual

Outer size of the CoolSpeK main body (without options):
- 162.6mm (Height) × 90mm (Width) × 111mm (Length)

Specifications

- Liquid nitrogen reservoir: Stainless, 2 Litre
- Low-temperature sample chamber: Aluminium, polyurethane foam for thermal insulation
- Optical windows: Quartz, Three-way
- Suitable cell: Outer dimension of 12.5mm × 12.5mm
- Temperature control: Regulated 0°C to room temperature
- Temperature range: (optional) -80°C to 100°C
- Volume of LN2 consumption: ≤1 Litre/hour
- Precision of temperature control: ±1°C or ±0.5% of indication value, whichever is greater (error of the sensor not included)
- Quantity of dew condensation: ≤0.1 OD/hour at -80°C 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.
  - AC100V 1A (Transformer will be provided according to the voltage of destination country)
- System electronics: Liquid nitrogen

Application Examples

- Time-dependent UV-vis Spectra
- Variable-temperature UV-vis, CD, and fluorescence spectra

For UV-Vis spectrophotometers:

CoolSpeK UV - USP-203-B

For Circular Dichroism (CD) spectrophotometers:

CoolSpeK CD - USP-203CD-B

- User-friendly
- -80°C to +100°C in units of 0.1°C
- Striking performance with liquid solution
- Kinetics
- Light-weight and compact footprint
This cryostat CoolSpeK enables you to easily obtain spectra and chemical kinetics rates under low-temperature condition.

CoolSpeK is attached to a sample compartment of commercial UV-Vis or fluorescence spectrophotometers by using an adaptor. Various kinds of options are supplied for customer's requirements.

### Features

- **Chemical kinetics**
  - CoolSpeK is able to measure a chemical reaction process by injecting a reagent and using a magnetic stirrer (optional).

- **User-friendly**
  - CoolSpeK does not 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 0.00024 hour at -80°C with Unisoku spectrophotometer, after heat treatment.*

### Temperature range

- 80°C ~ room temperature
- (Standard) 80°C ~ room temperature
- (Optional) 80°C ~ 100°C

### Extensive customer base

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 adaptors. Cuvettes with cap for spectrophotometers can be used for this cryostat.

*The size sample compartments in some spectrophotometers may not be shot when is attached the cryostat.

### Variety of Options

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

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**Systems interfaceable with USP-203-A**

- Unisoku Monogoldow Rayleigh KIN-300
- Agilent 8453/8454 Diode Array Spectrophotometer
- Beckman DU6400 Spectrophotometer
- E-Max Instruments Fluorescence Spectrophotometer
- JASCO Spectrophotometer V-550/V-570/V-560/V-500
- JASCO Fluoromax Spectrophotometer FP-A500
- JASCO Circular Dichroism/Dispersion Measurement System J-720000
- Hitachi Packard 8453/8454 Diode Array Spectrophotometer
- Hitachi Spectrophotometer U-3500

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**Magnetic stirrer (No.CS-ST)**

This is attached on the front of CoolSpeK main body.

*This magnetic stirrer cannot be used 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)

**Adaptor for 1 mm light path length cell (No.CS-CL-H11)**

This adaptor fills a gap between the cuvette and the cryostat internal body.

*This design makes the adapter have a thermal conduction better.*

**Adaptor for 2 mm light path length cuvette is also available.*

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

Suitable samples: a solid sheet or powder

*Please contact us if your sample dimension is different from above.*

**Solid sample holder (for fluorescence) (No.CS-KF-H5-27)**

Suitable samples: a solid sheet or powder

*Please contact us if your sample dimension is different from above.*

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*Contact us for more details.*