J-1000 series

CD Spectrometer

Software Manual

JASCO Spectra Manager^{TM} CFR

Jasco

Preface

This instruction manual serves as a guide for using this software. It is intended to instruct first-time users on how to properly use the software, and to serve as a reference for experienced users.

Before using the software, read this instruction manual carefully, and make sure you fully understand its contents. This manual should be easily accessible to the operator at all times during software operation. When not using the software, keep this manual stored in a safe place. Should this instruction manual be lost, order a replacement from your local JASCO distributor.

Servicing

Contact your local JASCO distributor for instrument servicing. In addition, contact your JASCO distributor before moving the instrument to another location. Consumable parts should be ordered according to part number from your local JASCO distributor. If a part number is unknown, give your JASCO distributor the model name and serial number of your instrument.

Do not return contaminated products or parts that may constitute a health hazard to JASCO employees.

Notices

(1) JASCO shall not be held liable, either directly or indirectly, for any consequential damage incurred as a result of product use.

(2) Prohibitions on the use of JASCO software

- Copying software for purposes other than backup
- Transfer or licensing of the right to use software to a third party
- Disclosure of confidential information regarding software
- Modification of software
- Use of software on multiple workstations, network terminals, or by other methods (not applicable under a network licensing agreement concluded with JASCO)

(3) The contents of this manual are subject to change without notice for product improvement.

(4) This manual is considered complete and accurate at publication.

(5) This manual does not guarantee the validity of any patent rights or other rights.

(6) If a JASCO software program has failed causing an error or improper operation, this may be caused by a conflict from another program operating on the PC. In this case, take corrective action by uninstalling the conflicting product(s).

(7) *Windows* is a registered trademark of *Microsoft Corporation* in the United States and other countries. In general, company names and product names are trademarks or registered trademarks of the respective companies. However, the ^{TM} and $^{®}$ marks are not used in all cases in this manual.

(8) JASCO and the JASCO logo are registered trademarks of JASCO Corporation in Japan and other countries.

Limited Warranty

Products sold by JASCO, unless otherwise specified, are warranted for a period of one year from the date of shipment to be free of defects in materials and workmanship. If any defects in the product are found during this warranty period, JASCO will repair or replace the defective part(s) or product free of charge.

THIS WARRANTY DOES NOT APPLY TO DEFECTS RESULTING FROM THE FOLLOWING:

(1)   IMPROPER OR INADEQUATE INSTALLATION
(2)   IMPROPER OR INADEQUATE OPERATION, MAINTENANCE, ADJUSTMENT OR CALIBRATION
(3)   UNAUTHORIZED MODIFICATION OR MISUSE
(4)   USE OF CONSUMABLE PARTS NOT SUPPLIED BY AN AUTHORIZED JASCO DISTRIBUTOR
(5)   CORROSION DUE TO THE USE OF IMPROPER SOLVENTS, SAMPLES, OR DUE TO SURROUNDING GASES
(6)   ACCIDENTS BEYOND JASCO'S CONTROL, INCLUDING NATURAL DISASTERS
(7)   CONSUMABLES AND PARTS OF WHICH WARRANTY PERIOD IS SPECIFIED OTHERWISE.

THE WARRANTY FOR ALL PARTS SUPPLIED AND REPAIRS PROVIDED UNDER THIS WARRANTY EXPIRES ON THE WARRANTY EXPIRATION DATE OF THE ORIGINAL PRODUCT. FOR INQUIRIES CONCERNING REPAIR SERVICE, CONTACT YOUR JASCO DISTRIBUTOR AFTER CONFIRMING THE MODEL NAME AND SERIAL NUMBER OF YOUR INSTRUMENT.

JASCO Corporation
2967-5, Ishikawa-machi, Hachioji-shi
Tokyo 192-8537,
JAPAN

Notation Used

The following notational conventions are used throughout this manual:

General Notation

Notation	Meaning
[Measurement] menu **[Parameters...] command**	Names of menus, commands, and text boxes are enclosed in square brackets '[ ]', followed by a description indicating whether the function is a menu, command, text box, etc. Shortcut keys used to select menus or commands are underlined.
<OK>, <Cancel>	Names of buttons are enclosed in angular brackets '< >'.

Keyboard Operations

Notation	Meaning
Shift **Ctrl**	The key is enclosed in a square and shown in boldface.
Alt , **F**	Keys that are to be pressed in succession are separated by commas. In the example shown on the left, the **Alt** key is to be pressed and released, followed by the **F** key.
Shift + →	Keys that are pressed simultaneously are separated by a "plus" sign. In the example shown on the left, press the → key while holding down the **Shift** key.

Mouse Operations

Notation	Meaning
Point	Move the mouse pointer to the specified item.
Click	Quickly press and release the mouse button.
Double-click	Click the mouse button twice in rapid succession.
Drag	Point to an item, click and hold down the mouse button. Move the mouse with the button held down, and release the button when the pointer is in the desired position.

Contents

1. Introduction
1.1　How to Use This Manual

This manual is for the JASCO J-1000 series CD spectrometer measurement program that runs on *Microsoft Windows*. The J-1000 series CD spectrometer measurement program consists of [Spectra Manager CFR-Compliant Program], which conforms to FDA regulation 21 CFR Part 11 concerning electronic records and electronic signatures, and [Spectra Manager v.2-Compliant Program], which does not conform to these standards. This instruction manual refers to [Spectra Manager CFR-Compliant Program] and [Spectra Manager v.2-Compliant Program] as [CFR Version Program] and [Non-CFR Version Program], respectively.

This chapter describes the structure and use of this manual. The manual consists of 7 chapters including this one. An explanation of each chapter is given below. For this manual, *Microsoft Windows* is referred to as *Windows* and a personal computer as a PC.

1. Introduction

This chapter describes how to use this manual and gives an overview of each program and menu. Read this chapter first.

2. Starting and Exiting Programs and the [Spectra Manager] Program Reference

This chapter describes detailed procedures ranging from turning on/off the CD spectrometer and PC to starting/exiting the programs. Refer to Chapter 3 for details about program operations. In addition, this chapter provides the [Spectra Manager] program reference.

3. Accessory Registration Reference

This chapter describes how to register accessories used with the CD spectrometer.

4. Introduction to the [Spectra Measurement] Program

This chapter describes the [Spectra Measurement/Analysis] programs with examples of basic procedures. Users unfamiliar with *Windows* or first-time users of the CD spectrometer should follow the procedures described in this chapter for a general overview of how to operate the program.

5.　Introduction to the [Time Course Measurement/Analysis] Programs

This chapter describes the [Time Course Measurement/Analysis] programs with examples of basic procedures.

6 to 9.　Measurement Program References

These chapters describe common toolbar and menu commands for the [Spectra Measurement], [Time Course Measurement] and [Data Monitor] programs, in addition to the parameters used in these programs. Read the relevant chapters as required.

   6. Toolbar and menu reference.
   7. [Spectra Measurement] program reference
   8. [Time Course Measurement] program reference

9. [Data Monitor] program reference

10. Appendix

This chapter provides useful suggestions for specifying parameters for CD measurements.

1.2 FDA 21CFR Part 11

FDA 21 CFR Part 11 is a set of regulations regarding digital archiving of data and data records for GLP, GCP, and GMP procedures. These regulations cover a number of areas, including: 1) access control and electronic signature requirements for data recorded by any computer-controlled analytical system in which the results are digitally archived; 2) the provision of security functions that can only be accessed by authorized personnel to ensure the security and integrity of data; and 3) a data auditing mechanism with the automatic creation of an Audit Trail to maintain a record of any creation, modification or deletion of instrument data.

1.3 Features of [Spectra Manager] Compatible with FDA 21CFR Part 11

JASCO Spectra Manager[TM] is an integrated software package that acts as a common platform for the range of JASCO analytical instruments, including UV/Vis, near-infrared, infrared, fluorescence, Raman, polarimetry, and circular dichroism spectrometers. The Spectra Manager[TM] software provides functionality ranging from analytical instrument control and spectral data processing to sophisticated and specialized data analysis programs. JASCO Spectra Manager[TM] CFR provides security and auditing functionality that ensures the security, integrity and confidentiality of electronic records by enforcing the use of electronic signatures and other security measures as described in the regulations outlined in 21 CFR Part 11.

JASCO Spectra Manager[TM] CFR consists of three core modules: Administrative Tools and Security Manager modules; intrinsic components of the Spectra Manager[TM] CFR software; and a database, which is an external component to the Spectra Manager[TM] CFR software. In addition, there are two broad classes of add-on modules: instrument drivers, which are spectrometer-specific; and spectral analysis modules, which provide a range of sophisticated analytical and data processing tools. These add-on modules integrate seamlessly with the three core components of the Spectra Manager system to provide compliance with 21 CFR Part 11 regulations over the entire range of JASCO products. Figure 1.1 illustrates the system organization.
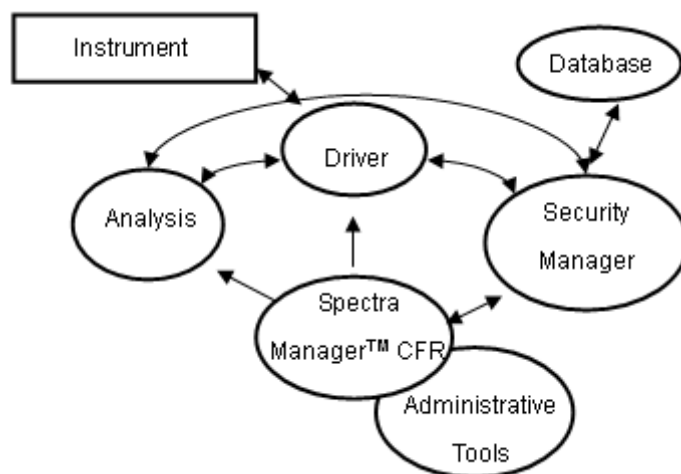

Figure 1.1 Structure of Spectra Manager[TM] CFR

All of the security management functions of JASCO Spectra Manager[TM] CFR are accessed through the Administrative Tools interface. The Security Manager components of the system are not directly accessible by a user, and thus the operation of these modules is not described.

For secure management of data and data records, JASCO Spectra Manager[TM] CFR has two levels of security: system-level security and workgroup-level security.

When a user is registered in JASCO Spectra Manager[TM] CFR, the user must be assigned to one of four possible System Access Levels: "Administrators", "Power Users", "Users", or "Limited Users". The level of control that a user has over the management functions of the software system is determined by the System Access Level assigned to that user. Table 1.1 outlines the different rights assigned to the different types of users depending on their System Access Levels.

Table 1.1 Rights of each System Access Level

	Administrators	Power Users	Users	Limited Users
Display/modify system policy	OK			
Add/delete users	OK			
Modify user properties (incl. System Access Level)	OK			
Add a workgroup	OK			
Delete a workgroup	Workgroup Managers only			
Modify workgroup users	Workgroup Managers only			
Add/delete instruments	OK			
Modify instrument configuration	OK			
Add/delete programs	OK			
Display log management	OK	OK		

Workgroups correspond to actual groupings of users within the organization and may represent divisions such as projects, departments, or research groups. Each workgroup has a set of users, instruments, accessories, and analysis programs associated with it; only users registered with a specific workgroup may access the instruments and programs of that workgroup. Within a workgroup, users are granted access as either a "Manager", "Analyst", or "Operator", with authorities to modify instrument and analysis settings and use resources within the workgroup determined by the Workgroup User Rights granted. Selectable Workgroup User Rights vary depending on the system access level of the user. Table 1.2 outlines the relationship between the System Access Levels and Workgroup User Rights.

Table 1.2 Qualified access levels by Workgroup User Rights

	Administrators	Power Users	Users	Limited Users
Managers	OK	OK		
Analysts	OK	OK	OK	
Operators	OK	OK	OK	OK

By employing a two-level security model, global security authorization is independent of instrument, accessory, and application authorization, resulting in a highly flexible security system. Table 1.3 outlines the different rights assigned to the different types of users depending on their Workgroup User Rights.

Table 1.3 Rights of each Workgroup User Rights

	Managers	Analysts	Operators
Register/unregister workgroup users	OK		
Change Workgroup user authorities	OK		
Register/unregister instruments for the workgroup	OK		
Register/unregister programs for the workgroup	OK		
Use a registered instrument	OK	OK	OK
Use a registered instrument application	OK	OK	OK
Modify measurement parameters	OK	OK	
Use a registered analysis program	OK	OK	OK
Modify analysis parameters	OK	OK	
Electronically sign data	OK	OK	OK

Figure 1.2 shows the typical operational flow of the JASCO Spectra Manager^{TM} CFR. First, a user is created (registered) and their System Access Level is assigned using Administrative Tools. A Workgroup is created (registered), and individual users and analytical instruments are assigned to the Workgroup. Detailed access to instrument control and analysis programs can be set at the User and Workgroup levels. Access control levels as required by FDA 21 CFR Part 11 regulations are determined by the Administrative Tools settings.

Routine analyses can then be conducted by the operator using the measurement/analysis programs in JASCO Spectra Manager^{TM} CFR. Since all levels of access are managed by Security Manager, individual users are only able to execute procedures that are allowed by their assigned access level. Access control ranges from declaring measurement parameters to conducting measurements and performing data analysis.

Analytical data obtained using any of the procedures described above can be saved as an electronic record with an electronic signature.
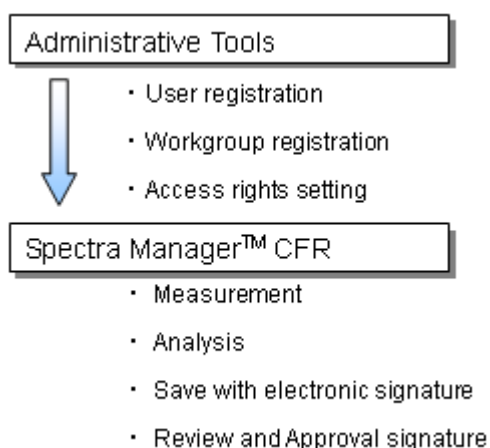

Figure 1.2 Operational flow

1.4   Overview of [Spectra Manager]

[Spectra Manager] refers to the entire suite of measurement/analysis and administrative programs for JASCO CD spectrometers.

Specifically, [Spectra Manager] is a software program that communicates with the CD Spectrometer to start various measurement and analysis programs. Common programs that are used include programs for performing measurements using the CD Spectrometer, the [Validation] program for checking the performance of the CD spectrometer, and the [Spectra Analysis], [JASCO Canvas] and [Administrative Tools] programs.

Spectra Measurement	Controls the CD spectrometer and measures samples.
Validation	Checks the performance of the CD spectrometer.
Spectra Analysis	Displays, processes, and prints the data obtained by [Spectra Measurement].
JASCO Canvas	Customizes the format of spectral data for printing.
Administrative Tools	Controls the administration of the CD spectrometer and measurement/analysis programs including the assignment of user authority.

This manual mainly explains how to use several of the measurement programs. Refer to [Hardware Manual] for details about how to use the CD spectrometer. Refer to the individual instruction manuals for details about the [Validation], [Interval Scan Measurement], [Spectra Analysis], [Interval Data Analysis], and [JASCO Canvas] programs.

2. Starting and Exiting Programs and the [Spectra Manager] Program Reference

2.1 Starting the program

2.1.1 Turning on the CD Spectrometer

(1) Confirm that the standard detector is installed on the J-1000 series CD spectrometer. If other detector has been installed, replace it with the standard detector. Refer to the hardware manual "Model J-1100/1500 CD Spectrometer" for instructions on removing or installing the detector.

(2) Supply nitrogen gas at a flow rate of 3 L/min. It takes about five minutes to displace the air from the interior of the optical system at this flow rate. If measurements are carried out at wavelengths shorter than 190 nm, the light will be absorbed by residual traces of oxygen. In this case, increase the nitrogen flow rate to prevent a decrease in the light intensity incident on the sample.

Nitrogen flow rate for different measurement wavelength ranges:
Up to 190 nm	2 L/min
Up to 185 nm	2 to 15 L/min
Up to 180 nm	15 to 20 L/min
Less than 180 nm	More than 20 L/min

(3) When using the 450 W Xe lamp, feed cooling water to the light source at a flow rate of about 2 L/min.

(4) Turn on the "Power" switch at the left side of the CD spectrometer.

WARNING!: Running the xenon (Xe) lamp in air will generate ozone gas, which is harmful to humans. Always supply nitrogen gas at a flow rate of 3 L/min for a few minutes before turning on the light source.

Note 1: Ozone gas absorbs light at wavelengths of 200 to 300 nm and 600 to 700 nm. This makes it difficult to perform measurements in these wavelength regions and can also damage optical parts due to corrosion. Always supply nitrogen gas before turning on the light source.
Note 2: Never use helium gas. It will permeate into the photomultiplier tube, reducing the vacuum level and the functionality of the tube.
Note 3: If a PC-controlled nitrogen gas flow meter (an optional accessory) is installed, all that is necessary to do is to simply open the main valve of the gas cylinder. Nitrogen will start flowing when the spectrometer is started. The flow rate can be controlled via the measurement program.
Note 4: Step (3) is not necessary with the 150 W Xe lamp, which is cooled with air.
Note 5: Just turning ON the "Power" switch does not result in the light source being turned on. The light source will be turned on automatically when the measurement program is started.

2.1.2 Starting the PC and Windows and Registering a J-1000 Series CD spectrometer

Turn on the PC and monitor to start *Windows*. When a J-1000 series CD spectrometer is connected for the first time, registration of the CD spectrometer is required in [Spectra Manager].

Note: The operations described in this section can be performed only by Administrators.

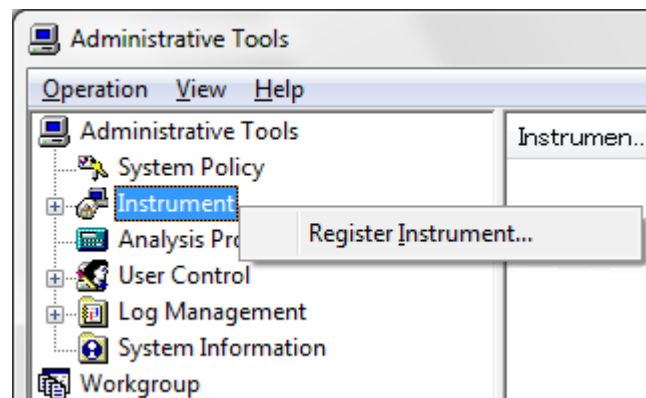Start [Administrative Tools], right-click [Instrument] and select [Register Instrument...] from the shortcut menu to display the window in Fig. 2.2.

Figure 2.1 [Administrative Tools] window

(1) Select the check box for the JASCO J-1000 series control driver and click the <Next> button to display the dialog box in Fig. 2.3.
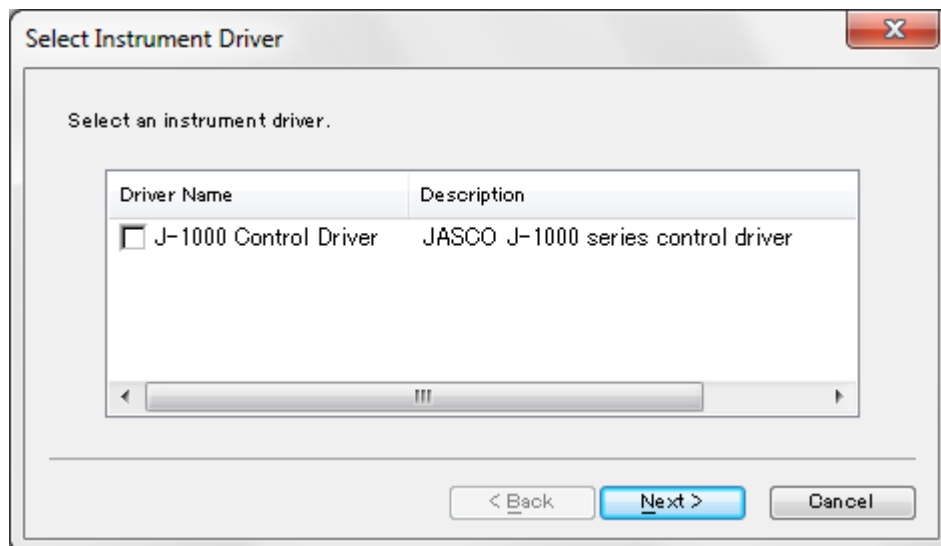
Figure 2.2 [Select Instrument Driver] dialog box

(2) Enter the CD spectrometer name, model name and serial number and then click the <Finish> button to register the CD spectrometer. The model name and serial number are inscribed on the name plate on the rear panel of the CD spectrometer.
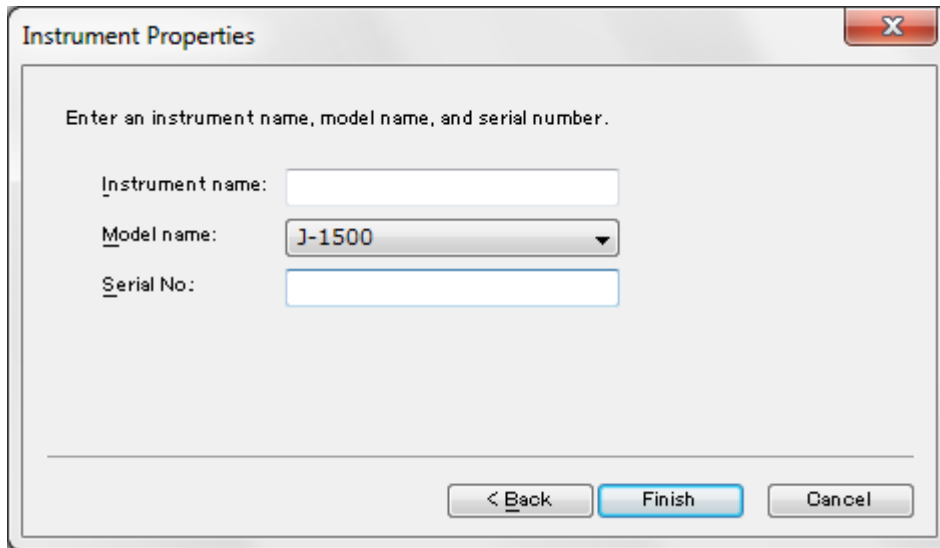
Figure 2.3 [Instrument Properties] dialog box

The CD spectrometer is registered and the name is displayed in the right pane of the [Administrative Tools] window.
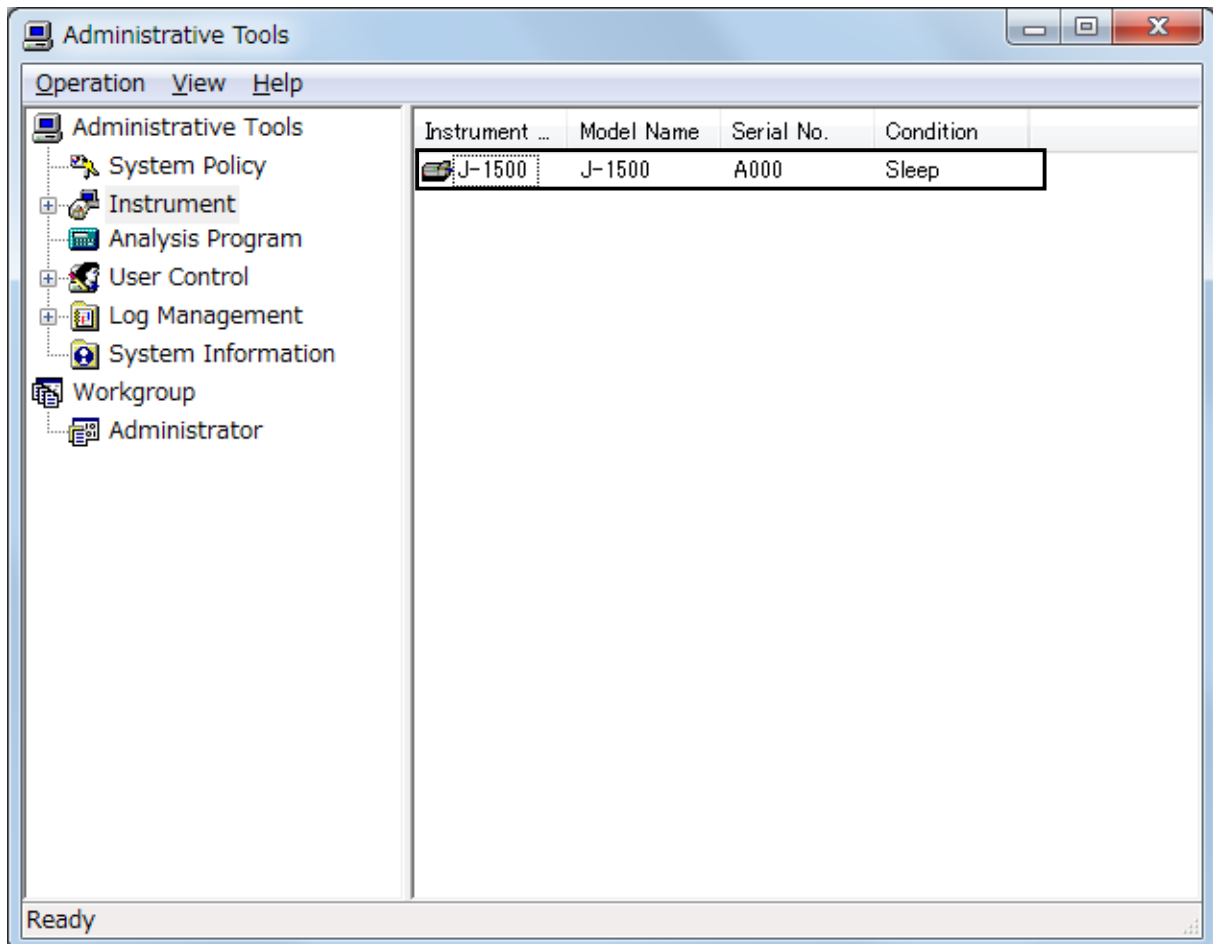

Figure 2.4 [Administrative Tools] window

9

> *Note: After registering the CD spectrometer, exit the program and perform the following operations after logging on again.*

(3) Restart [Spectra Manager] and start [Administrative Tools]. Right-click the registered CD spectrometer name and select [Properties...] to display the dialog box in Fig. 2.5. First, check that [Model name], [Display name], [Serial number], and [Driver version] are displayed in the [General] tab.
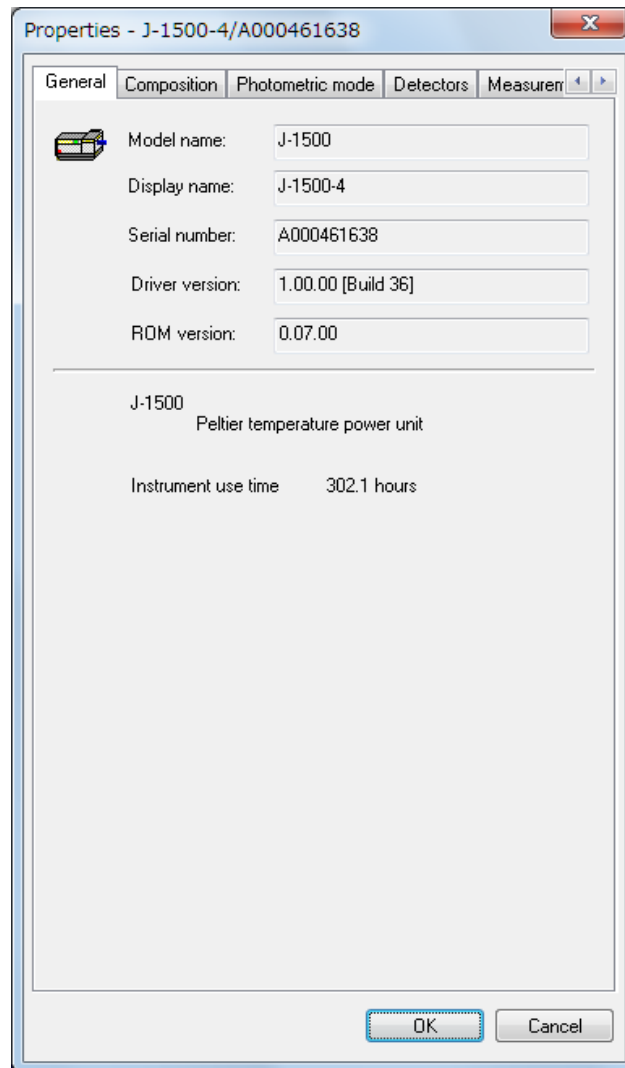
Figure 2.5 [General] tab in [Properties] dialog box

(4) Click the [Composition] tab to set parameters for the nitrogen gas flow meter and the light source.
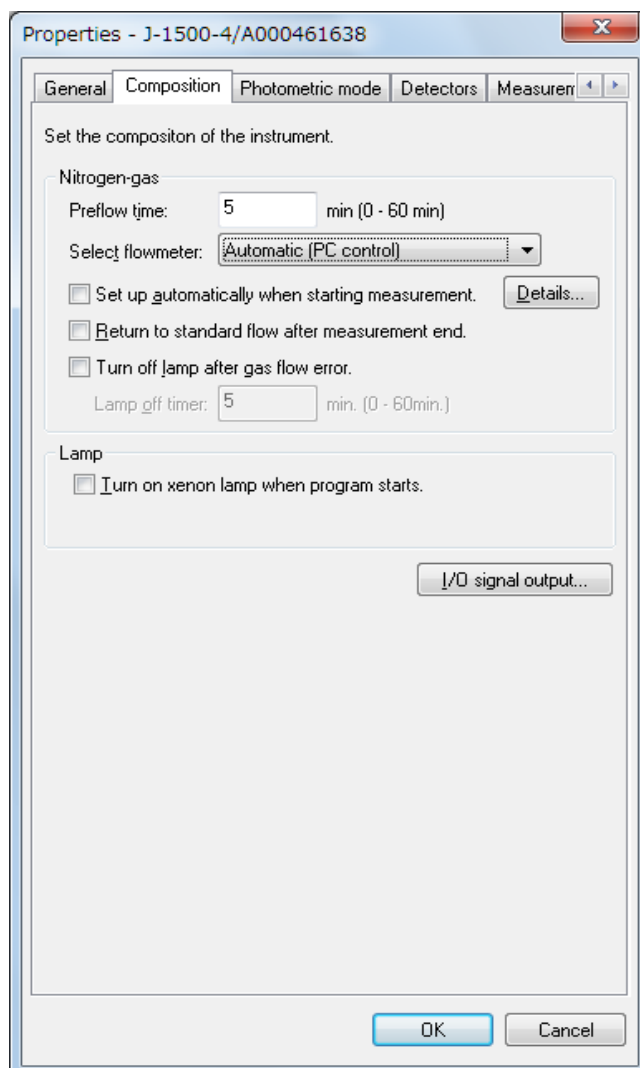
Figure 2.6 [Composition] tab in [Properties] dialog box

Nitrogen-gas	
[Preflow time]	Specifies the nitrogen gas preflow time before the light source is turned on.
[Select flowmeter]	Selects the nitrogen gas flow meter. [Manual without sensor]: Select this when using a manual flow meter with no sensor. [Manual with sensor]: Select this when using a manual flow meter with a sensor. [Automatic (PC control)]: Select this when using a PC-controlled automatic flow meter.
[Set up automatically at measurement]	Specifies the nitrogen gas flow rate for the idling or measurement state. The flow rate is automatically controlled. This function is only available when the
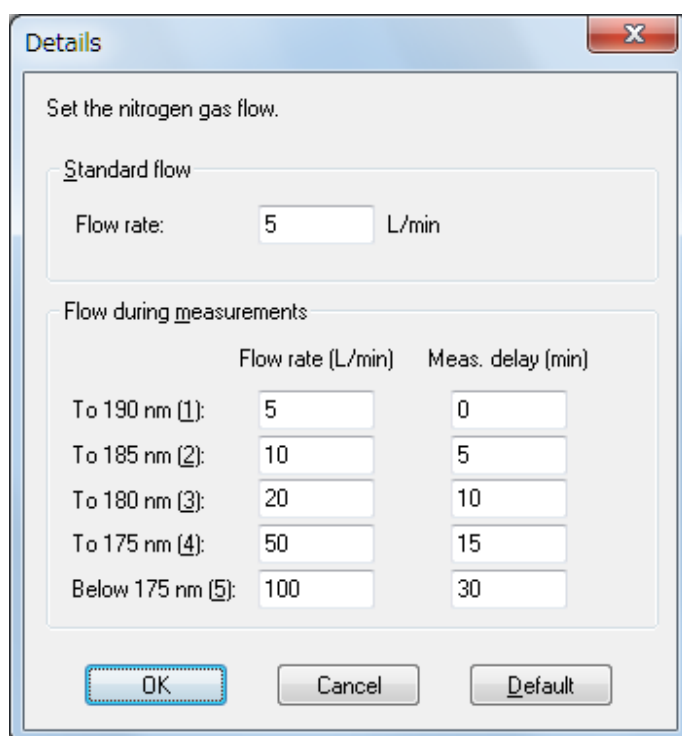
|	[Automatic (PC control)] flow meter is selected.
	  Figure 2.7 [Details] dialog box
[Return to standard flow after a measurement end]	Specifies that the flow rate is automatically returned to the standard flow rate after measurement. This function is only available when the [Automatic (PC control)] flow meter is selected.
[Turn off lamp after gas flow error]	Specifies that the lamp is automatically turned off after a gas flow error has occurred. This function is only available when the [Automatic (PC control)] or [Manual with sensor] flow meter is selected.
[Lamp off timer]	Specifies the time before the light source is automatically turned off after a nitrogen gas flow error has occurred. This function is only available when the [Automatic (PC control)] or [Manual with sensor] flow meter is selected.
Lamp	
[Turn on xenon lamp when program starts]	Specifies that the Xe lamp is automatically turned on when the measurement program is started.
<I/O signal output...>	Specifies that the drain and external start signals from the CD spectrometer are sent to the accessory attached to the I/O ports. Select the desired check boxes. When the accessory is made by JASCO, these settings are unnecessary.
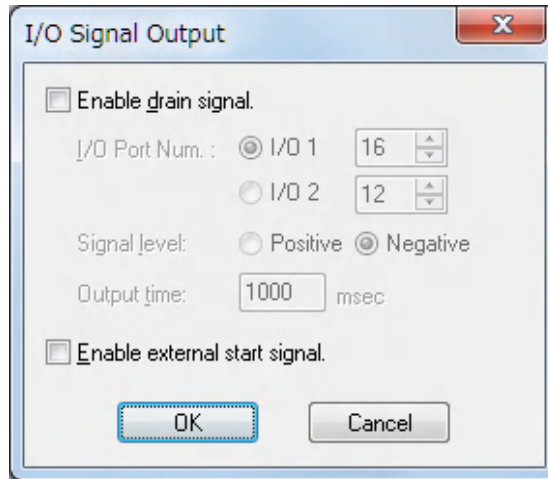
Figure 2.8 [I/O Signal Output] dialog box

(5) Click the [Photometric mode] tab to register the photometric mode.

The electric signals except other than CD signals can be detected using the J-1000 series CD spectrometer. The photometric modes selected in this dialog box are displayed in the measurement program. For J-1100, the available photometric modes are limited.
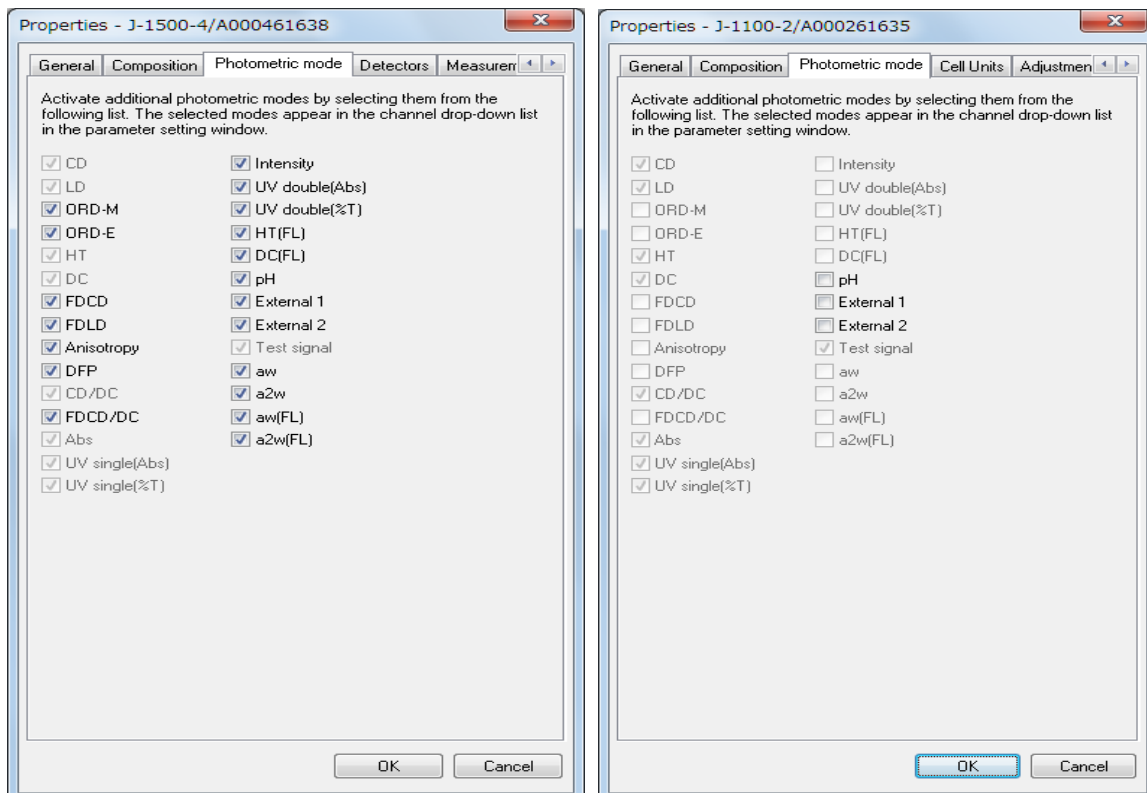

Figure 2.9 [Photometric mode] tab in [Properties] dialog box

CD	Measures the circular dichroism signal
LD	Measures the linear dichroism signal
ORD-M	Measures the optical rotational dispersion signal. The ORD-M accessory is required. (Not available for J-1100)

| ORD-E	Measures the optical rotational dispersion signal. The ORD-E accessory is required. (Not available for J-1100)
HT	Measures the high-tension (HT) voltage applied to the CD photomultiplier tube in the transmission configuration.
DC	Measures the direct current (DC) voltage applied to the CD photomultiplier tube in the transmission configuration.
FDCD	Measures the fluorescence detected circular dichroism signal. The FDCD accessory is required. (Not available for J-1100)
FDLD	Measures the fluorescence detected linear dichroism signal. The FDCD accessory is required. (Not available for J-1100)
Anisotropy	Measures the fluorescence anisotropy signal. (Not available for J-1100).
D.F.P.	Measures the degree of fluorescence polarization signal. (Not available for J-1100).
CD/DC	Measures the CD and DC signals and displays the CD signal divided by the DC signal.
FDCD/DC	Measures the FDCD and DC signals and displays the FDCD signal divided by the DC signal. (Not available for J-1100).
Abs.	Measures the absorbance spectrum. The absorbance signal is obtained by conversion of the HT signal. Select this when the HT voltage for the photomultiplier tube in the transmission configuration is set to Auto.
UV single (Abs.)	Measures the absorbance spectrum. The absorbance signal is obtained by conversion of the DC signal. Select this when the HT voltage for the photomultiplier tube in the transmission configuration is set to Manual.
UV single (%T)	Measures the transmittance (%T) spectrum. The %T signal is obtained by conversion of the DC signal. Select this when the HT voltage for the photomultiplier tube in the transmission configuration is set to Manual.
Intensity	Measures the fluorescence intensity. Select this when the HT voltage for the photomultiplier tube in the fluorescence configuration (90 degrees with respect to the measurement beam direction) is set to Auto. (Not available for J-1100)
UV double (Abs.)	Measures the absorbance spectrum using a UV double beam attachment. (Not available for J-1100)

UV double (%T)	Measures the transmittance spectrum using a UV double beam attachment. (Not available for J-1100)
HT(FL)	Measures the applied voltage (HTV) to the photomultiplier tube in the fluorescence configuration (90 degrees with respect to the measurement beam direction). (Not available for J-1100)
DC(FL)	Measures the direct current (DC) voltage to the photomultiplier tube in the fluorescence configuration (90 degrees with respect to the measurement beam direction). (Not available for J-1100)
pH	Measures the direct current signal from the pH meter. The pH meter is required.
External 1	Measures the signal from external signal input 1 ("EXT 1" terminal on the rear panel of the amplifier).
External 2	Measures the signal from external signal input 2 ("EXT 2" terminal on the rear panel of the amplifier).
Test signal	This is mainly used for checking the instrument.
aw	Measures the 50 kHz signal from the detector in the transmission configuration for the measurement beam. (Not available for J-1100)
a2w	Measures the 100 kHz signal from the detector in the transmission configuration for the measurement beam. (Not available for J-1100)
aw(FL)	Measures the 50 kHz signal from the detector in the fluorescence configuration (90 degrees with respect to the measurement beam direction) for the measurement beam. (Not available for J-1100)
a2w(FL)	Measures the 100 kHz signal from the detector in the fluorescence configuration (90 degrees with respect to the measurement beam direction) for the measurement beam. (Not available for J-1100)
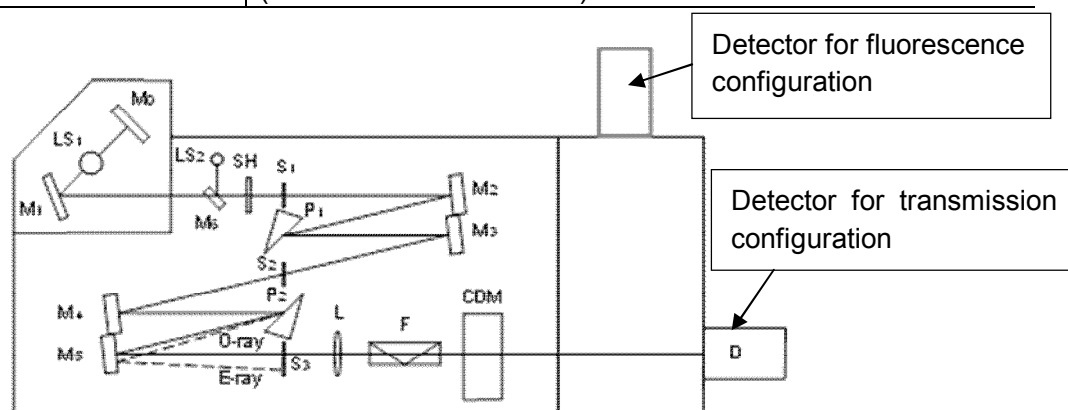
Figure 2.10 Configuration of detectors

(6) Click the [Detectors], [Measurement Units], [Cell Units] and [External Accessories] tabs to register detectors, measurement units, cell units, and external accessories, respectively. Refer to Chapter 4 for details about registering accessories.

(7) Click the [Adjustments] tab to perform CD spectrometer adjustments.
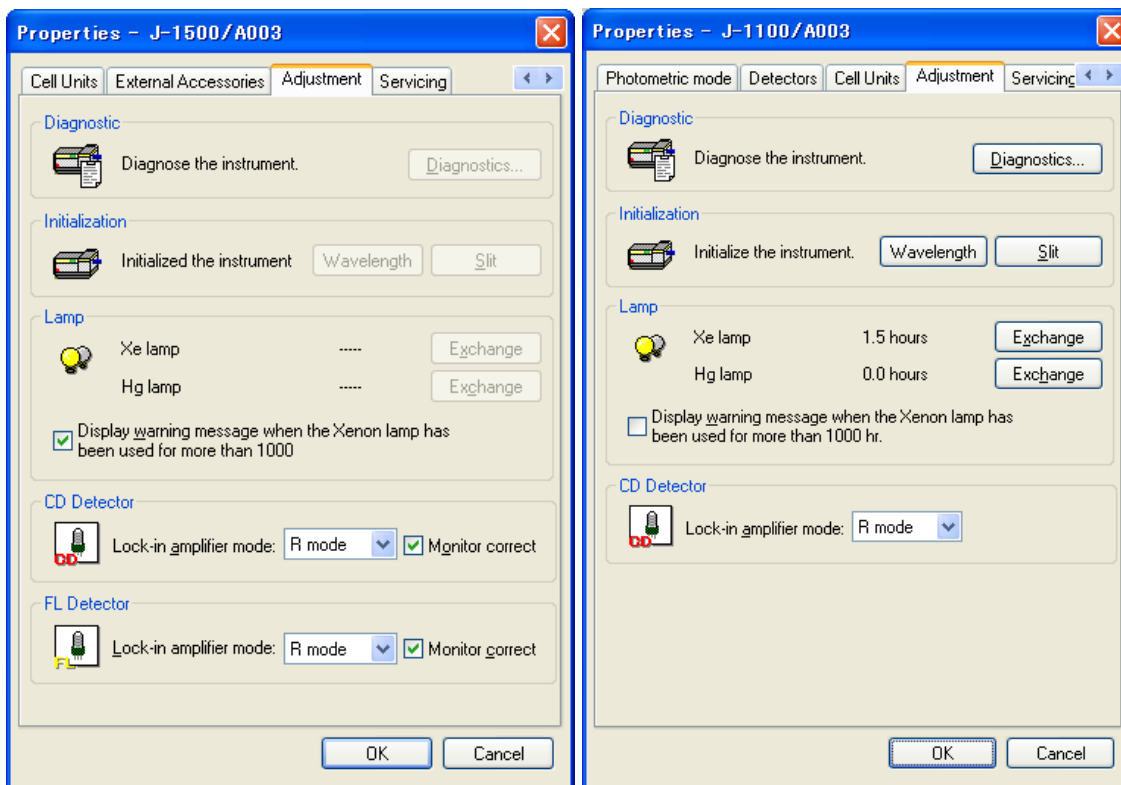
Figure 2.11 [Adjustments] tab in [Properties] dialog box

Diagnostic	
<Diagnostics...>	Confirms whether the CD spectrometer is functioning correctly.
Initialization	
<Wavelength>	Initializes the wavelength settings.
<Slit>	Initializes the slit width settings.
Lamp	
[Xe lamp]	Displays the number of hours the xenon lamp has been used. When the xenon lamp is exchanged, click the <Exchange> button to reset the number of hours used to 0.
[Hg lamp]	Displays the number of hours the mercury lamp has been used. When the mercury lamp is exchanged, click the <Exchange> button to reset the number of hours used to 0.
[Display warning message when the Xenon lamp has been used for more than 1000 hr]	Displays a warning message when the xenon lamp has been used for more than 1000 hours (see Fig. 2.12).

16
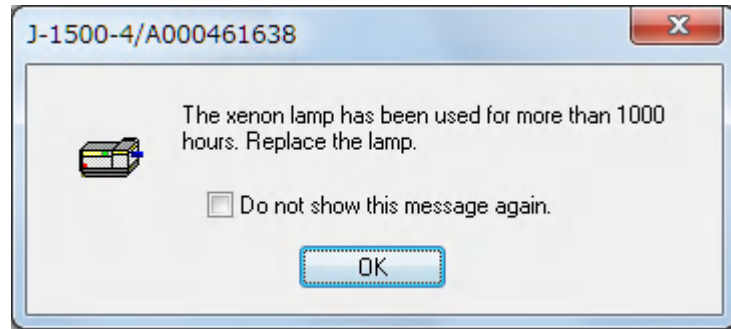
Figure 2.12 Warning message for xenon lamp usage time

Note:	*The lifetime of the xenon lamp is approximately 1000 hours. When it has been used for more than 1000 hours, the decrease in intensity of the light source will effect measurements.*

CD Detector	Selects the lock-in amplifier mode for the CD photomultiplier tube
[X mode]	Sets the lock-in amplifier mode to the single-phase mode.
[R mode]	Sets the lock-in amplifier mode to the double-phase mode. Select [R mode] for normal measurements.
FL Detector	Selects the lock-in amplifier mode for the FL photomultiplier tube. (Not available for J-1100)
[X mode]	Sets the lock-in amplifier mode to the single-phase mode.
[R mode]	Sets the lock-in amplifier mode to the double-phase mode. Select [R mode] for normal measurements.

Click the <Diagnostics...> button to display the [Diagnostics] dialog box. This function confirms whether the CD spectrometer is functioning correctly.
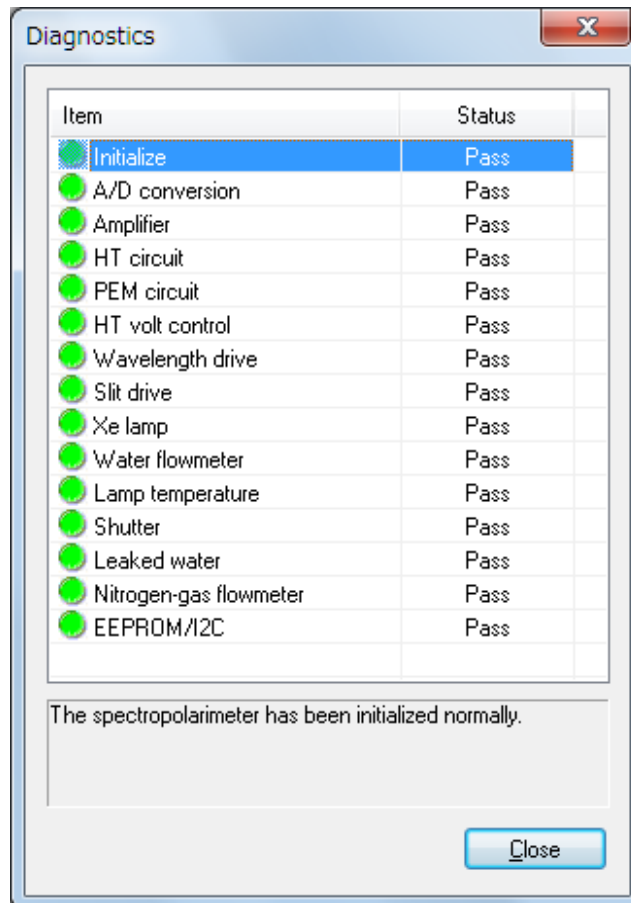
Figure 2.13 [Diagnostics] dialog box

If an error message is displayed in the message area in Fig 2.13, contact your local JASCO distributor.

(8) Click the [Servicing] tab to calibrate CD spectrometer conditions such as the detector sensitivity. If calibration is required, contact your local JASCO distributor.
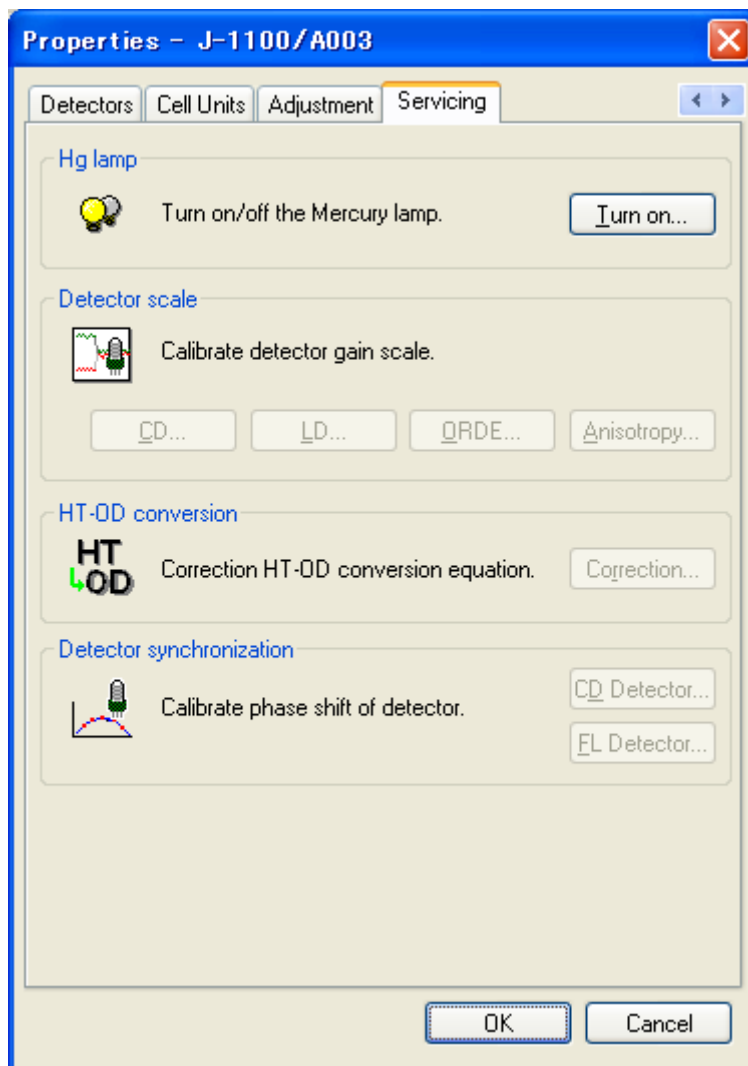
Figure 2.14 [Calibrations] tab in [Properties] dialog box

Hg lamp	Turns the mercury lamp on or off. Used by JASCO service engineers.
Detector scale	Calibrates the scale for CD, LD, ORDE and anisotropy signals. Used by JASCO service engineers.
HT-OD conversion	Calibrates the HT-OD conversion equation. Used by JASCO service engineers.
Detector synchronization	Calibrates the phase shift of the CD and FL detectors. Used by JASCO service engineers.

Note: In the CFR version, J-1000 must be registered to Workgroup before use. Refer to the [Spectra Manager CFR Administrative Tools] manual for details about registering the CD spectrometer to Workgroup.

2.1.3 Starting [Spectra Manager]

(1) After starting *Windows*, double-click the [Spectra Manager] icon located on the *Windows* desktop. Type the username and password in the logon dialog box to display the window in Fig. 2.15.

Note: [Spectra Manager] can also be started by selecting [Start] - [All Programs] - [JASCO] - [Spectra Manager] from the Windows [Start] menu.
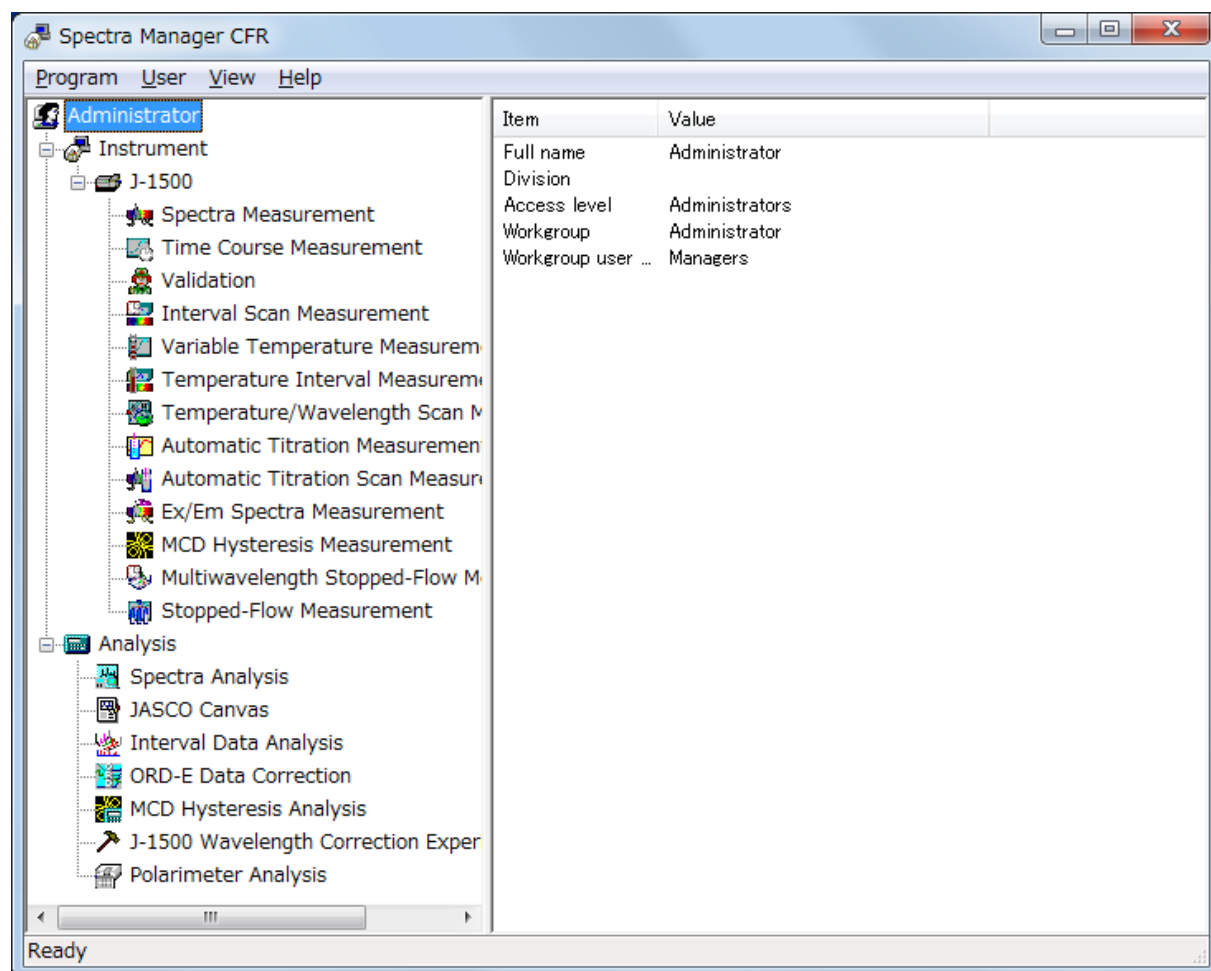
Figure 2.15 [Spectra Manager CFR] window

(1)   Start the [Spectra Measurement] program to measure a sample.

Double-click [Spectra Measurement] from the [Instrument] list of [Spectra Manager] to start the program. The window in Fig. 2.16 is displayed.
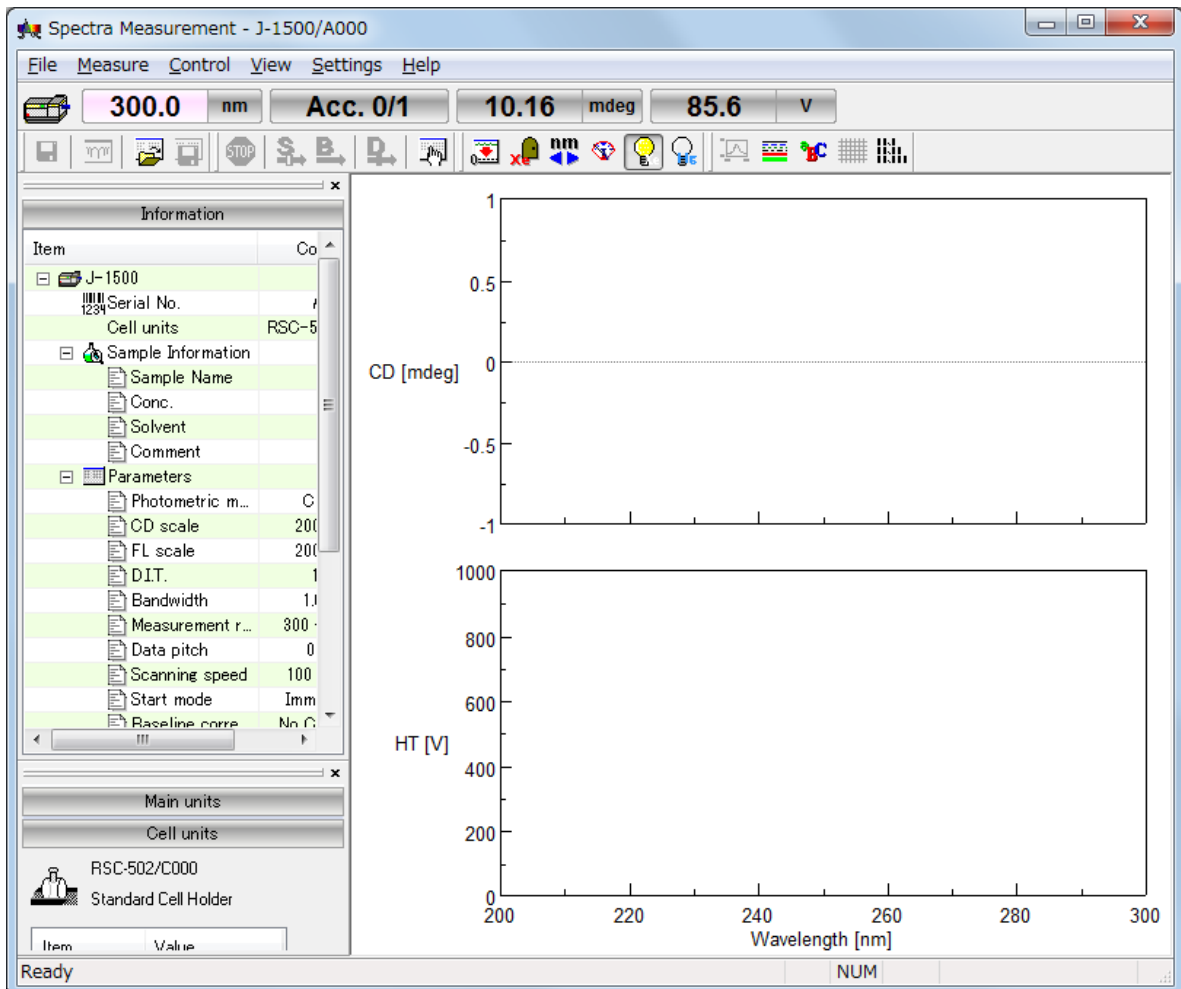
Figure 2.16 [Spectra Measurement] window

2.1.4　Components of the Program Window

In this section, the [Spectra Analysis] program window is used as an example to explain program operation components. The names of the various components (windows and dialog boxes) are also described.

View window

[Spectra Analysis] shows multiple spectrum display windows (called "Views") in the main program window. Views have no dedicated menu bar, toolbar or status bar. Instead, the toolbar buttons and other components in the [Spectra Analysis] program window can be used for the active View window.
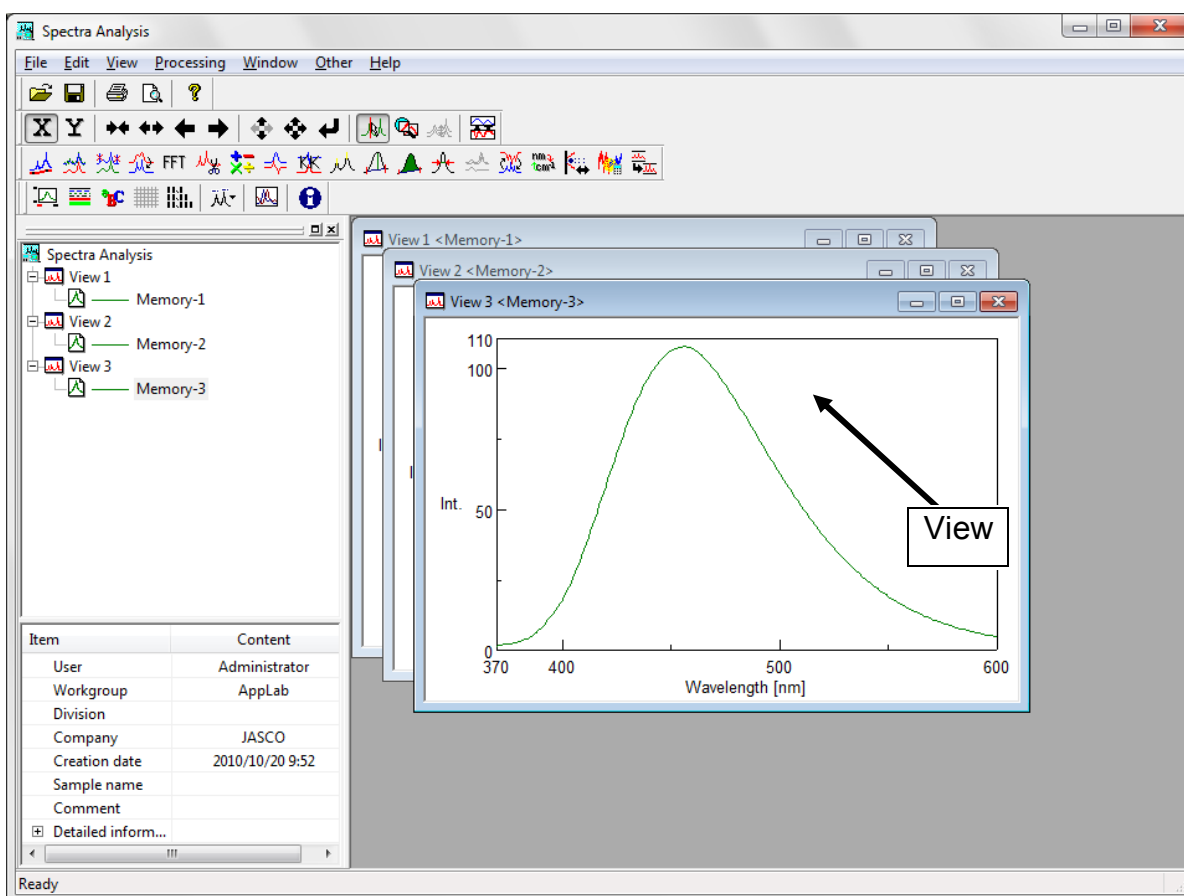
Figure 2.17 "Views" in [Spectra Measurement] program window

Dialog boxes

Commands and menu items ending with an ellipsis (...) open a dialog box when clicked. The opened dialog box usually contains parameters that must be specified. The [Styles] dialog box from the [View] menu is used as an example to explain the names and functions, as well as the operational rules for various sections of the dialog box.

To display the [Styles] dialog box in Fig. 2.18, select [Styles...] from the [View] menu in the [Spectra Analysis] program. The names of various sections of the dialog box are indicated below.
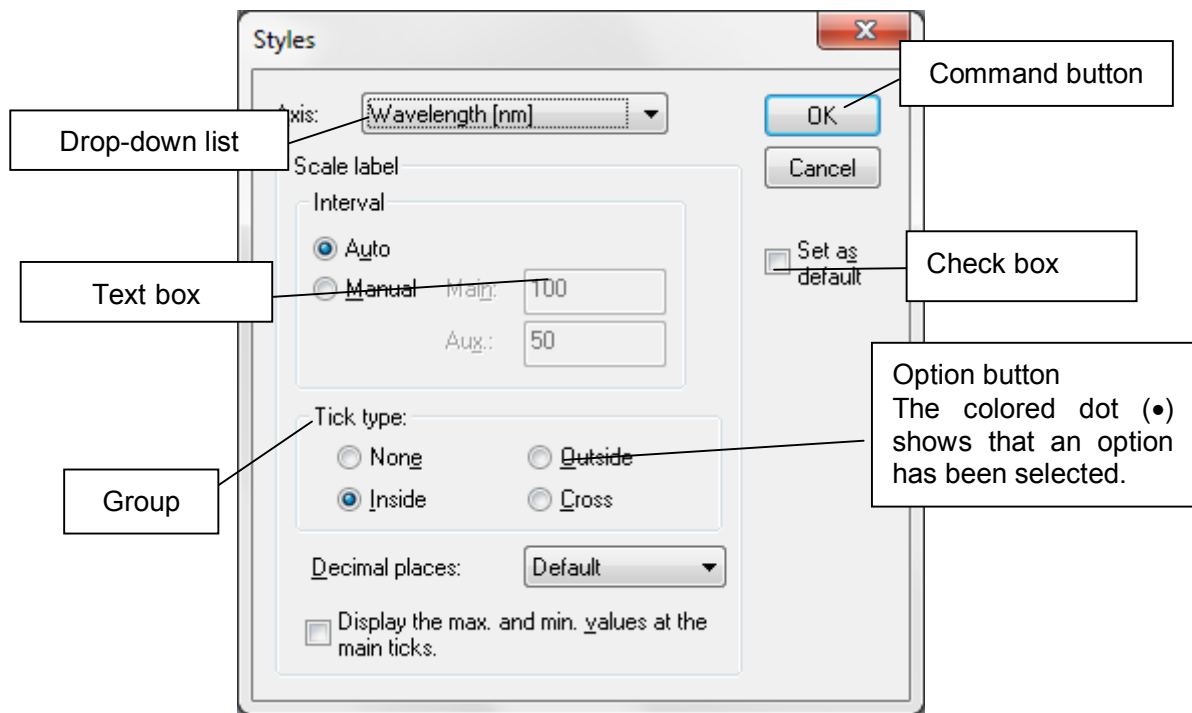
Figure 2.18 [Styles] dialog box

2.2   Exiting the Program

2.2.1   Exiting [Spectra Manager]

(1)   Select [Exit] from the [Program] menu to close [Spectra Manager].

Note: [Spectra Manager] can also be exited by clicking the <Close> button.
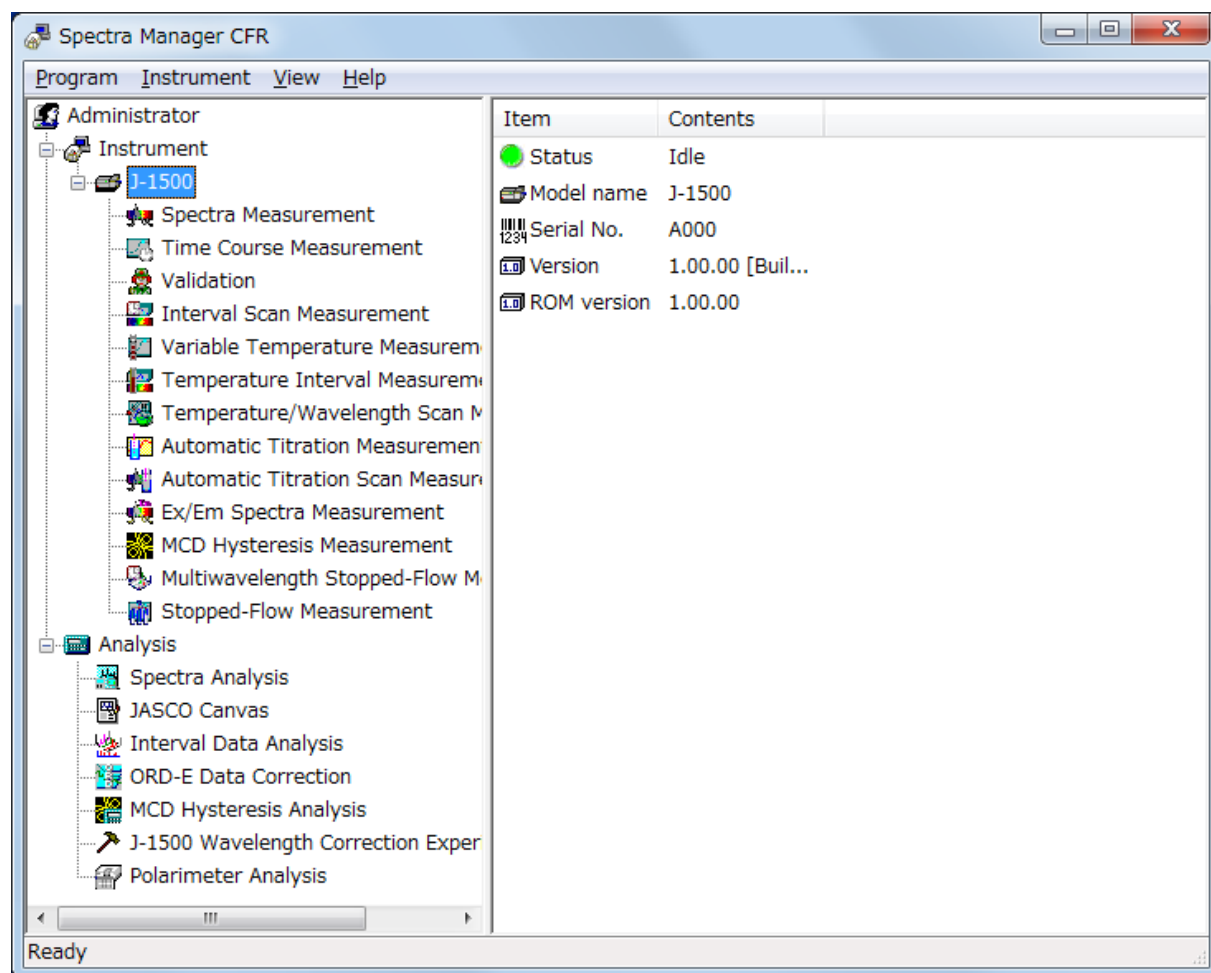
Figure 2.19 [Spectra Manager CFR] window

[Spectra Manager] cannot be exited before closing the running measurement/analysis programs. If programs are running, the dialog box in Fig. 2.20 is displayed. After clicking the <OK> button, close the running programs.
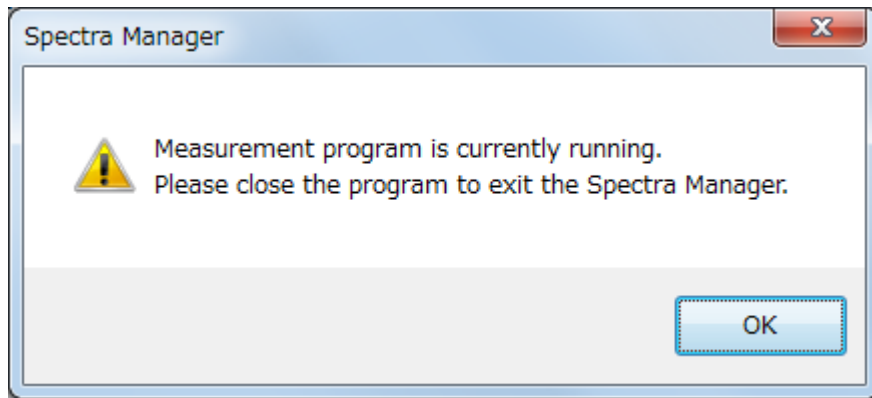
Figure 2.20 Message when a program is still running

(2)   Exiting *Windows*

Exit *Windows* in accordance with standard *Windows* operation procedures.

2.2.2   Turning off the PC and CD Spectrometer

(1)   First, turn off the PC and monitor. Do not forget to turn off the monitor.

(2)   Ensure that the sample compartment is empty, and then turn off the CD spectrometer.

2.3 [Spectra Manager CFR] Program Reference

[Spectra Manager CFR] is an integrated software package that acts as a common platform for the entire range of JASCO analytical instruments.
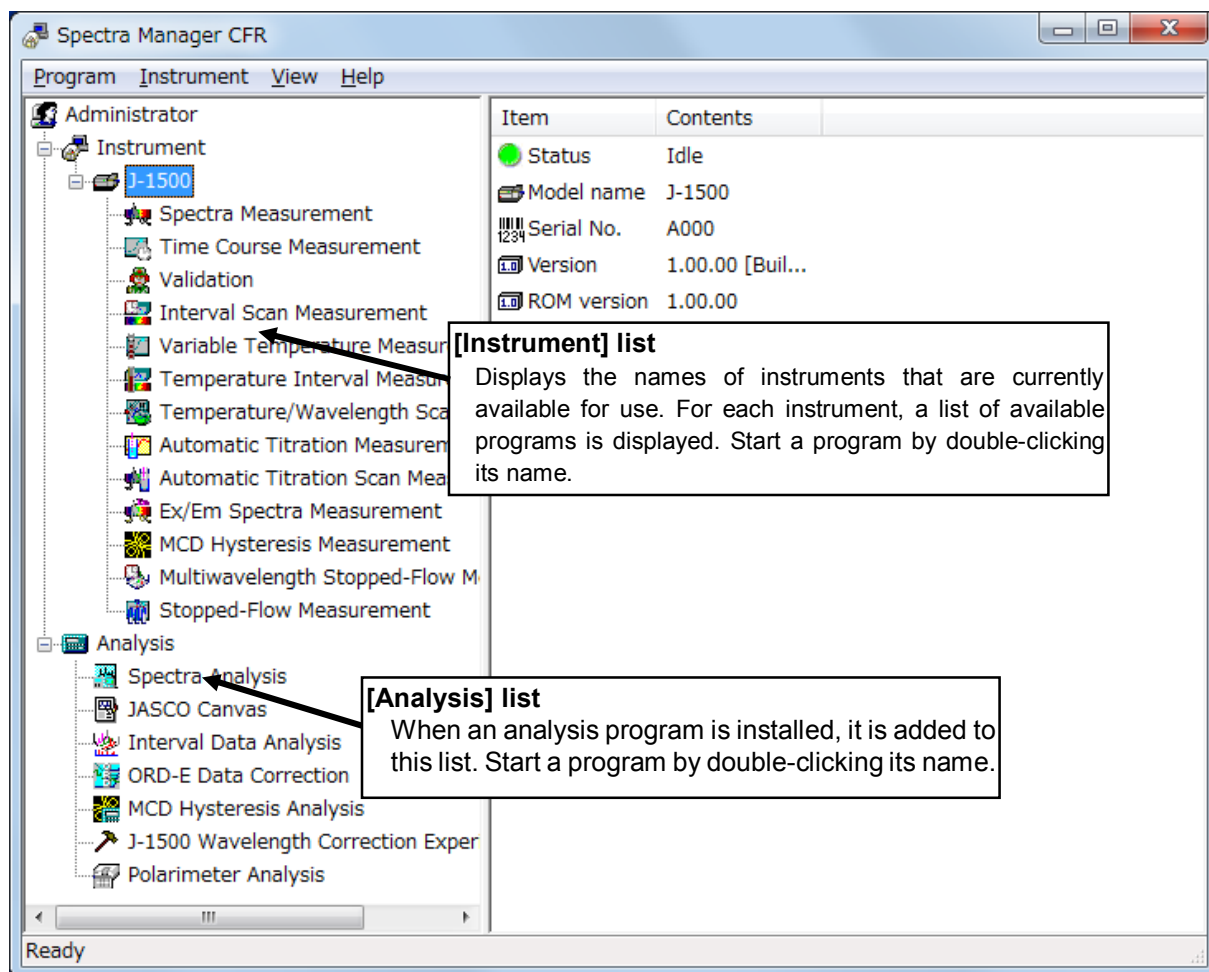
Figure 2.21 [Spectra Manager CFR] window

The standard measurement and analysis programs are displayed in Fig. 2.21. When an optional program is installed, it is added to one of these lists.

Note 1: The CD Spectrometer is also referred to as the "instrument" in this manual.
Note 2: "Communication" refers to sending a control signal from the PC to the CD spectrometer or transferring measured data from the CD spectrometer to the PC.

Menu

[Program] menu	
[Administrative Tools]	Starts the [Administrative Tools] program.
[Change Password...]	Changes the current password.
[Logoff...]	Logs off the current user.
[Exit]	Exits [Spectra Manager].
[User] menu	
[Change Workgroup...]	Changes the Workgroup.
[View] menu	
[Status Bar]	Shows/hides the status bar.
[Help] menu	
[Contents]	Displays the Help contents window.
[Search Topic]	Displays the Help search function window.
[About...]	Displays version information about the CD spectrometer control driver.

3. Accessory Registration Reference

The J-1000 series CD spectrometers and software automatically recognize an attached accessory, display information about the accessory, and start registered programs based on recognized accessories. This chapter provides information of installing and registering accessories, the program that is started when an accessory is recognized, and the actions of [Spectra Manager CFR] when recognizing an accessory.

3.1   Installing/Attaching an Accessory

Accessories for J-1000 series CD spectrometers are automatically recognized. Information about the respective accessory is contained within the accessory itself. The accessory is recognized when its cable is connected to the sample compartment connector. When installing a J-1000 accessory, confirm that the accessory cable is properly connected to the CD spectrometer connector.

Accessory connector

Accessory connecter
(for Peltier cell holder)
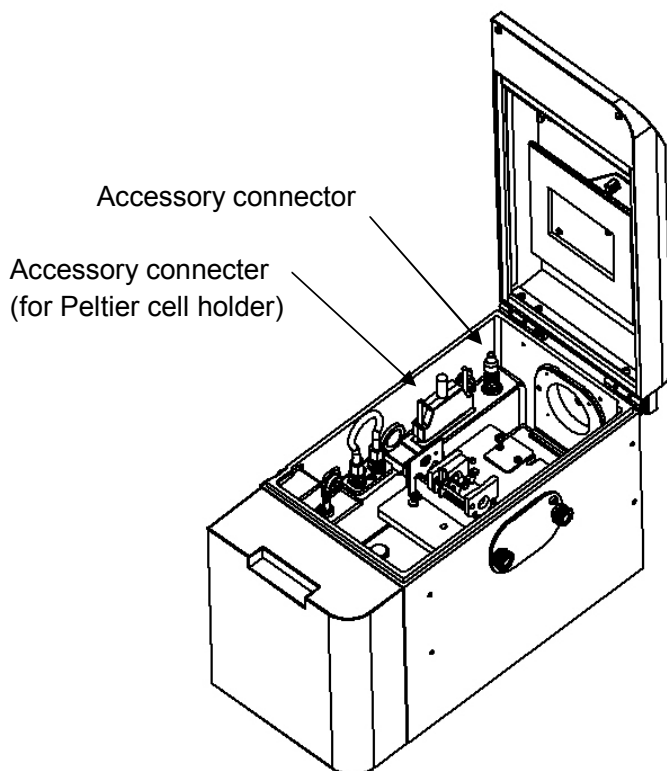
Figure 3.1 Location of J-1000 accessory connectors

3.2   Precautions for Peltier Thermostatic Cell Holder

The electrical power for the Peltier thermostatic cell holder is supplied from the J-1000 series CD spectrometer when this accessory is connected and detected by the instrument. When power is being supplied, an icon is displayed on the status bar.
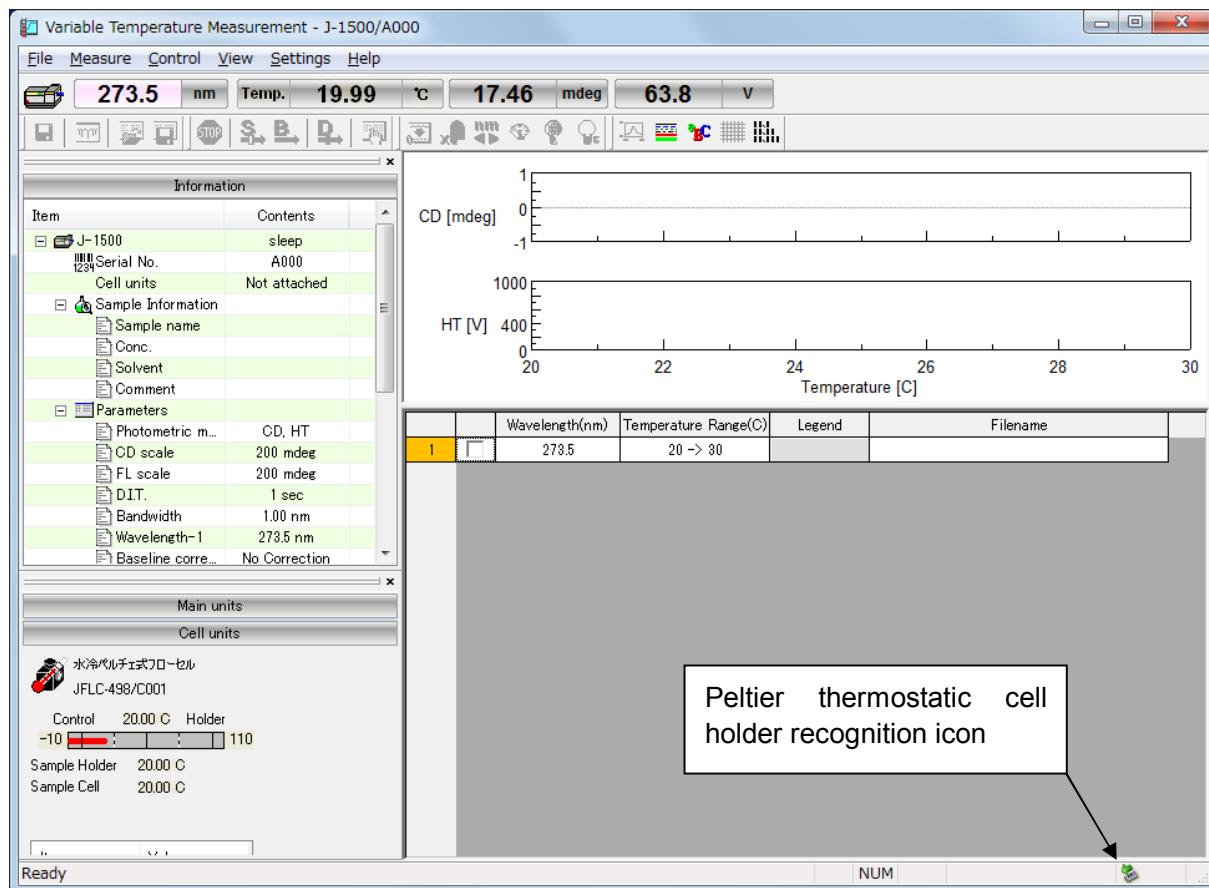
Figure 3.2 Icon displayed on the status bar after the Peltier thermostatic cell holder has been recognized

3.2.1 Removing the Peltier Thermostatic Cell Holder

This section describes how to remove the Peltier thermostatic cell holder while the J-1000 series instrument is running.

(1) Click the cursor on the accessory icon to display the [Safely Remove Temp unit] pop-up menu.
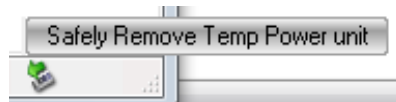
Figure 3.3 Pop-up prompt for safely removing the thermostatic unit

(2) Left-click the command to display the [Safely Remove Thermostatic Unit] dialog box.
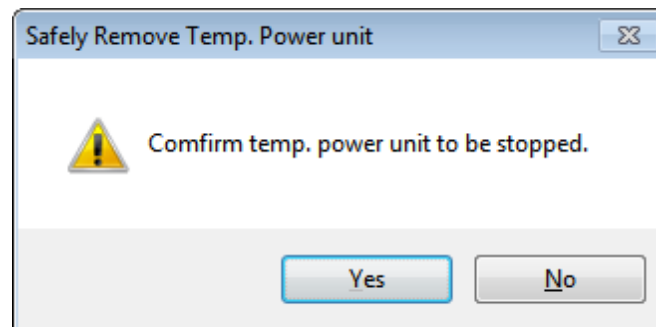
Figure 3.4 [Safely Remove Thermostatic Unit] dialog box

(3) Click the <Yes> button. The electrical power supply for the Peltier thermostatic cell holder will be stopped and the cell holder can now be safely removed.
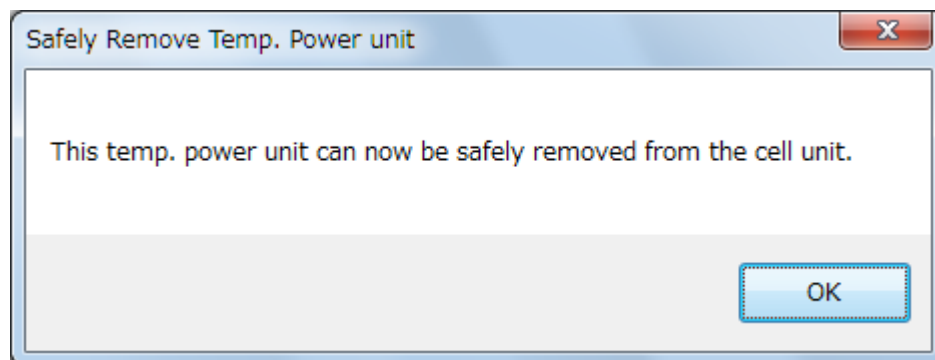
Figure 3.5 Confirmation message that thermostatic unit can be safely removed

To use the Peltier thermostatic cell holder again, reconnect its accessory cable to the J-1000 series instrument.

3.3 Registering Accessories

This section describes the procedure for registration of accessories used with the CD spectrometer.

3.3.1 Registering an Automatically-Recognized Accessory

(1) Confirm that the instrument is turned on and that [Spectra Manager] is running.

(2) Connect the automatically-recognized accessory to the sample compartment. The accessory name, accessory ID and serial number are automatically registered.

3.3.2 Registering an Accessory Requiring Manual Registration

Note: This operation can be performed only by Administrators.

(1) Confirm that the CD spectrometer is turned on and that [Spectra Manager] is running. After starting [Administrative Tools], right-click the instrument name and select [Properties...] (see Fig. 3.6).
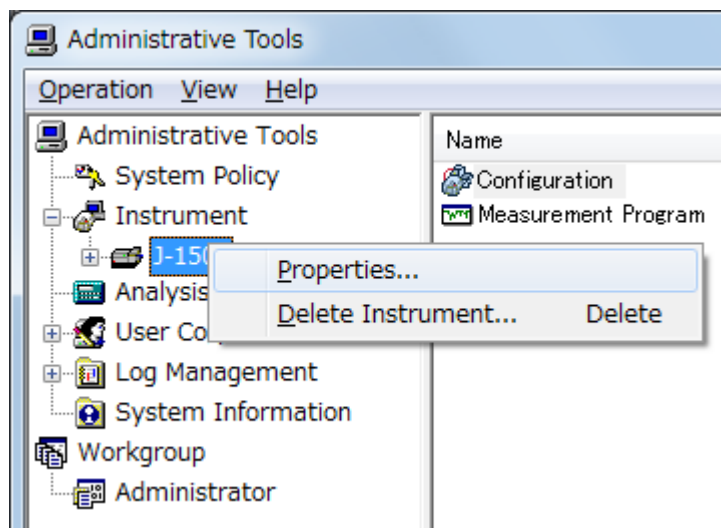
Figure 3.6 J-1000 instrument shortcut menu

3.3.2.1 Detectors

This section describes the procedure for registration of detectors used with the CD spectrometer.

(1) Click the [Detectors] tab in Fig. 3.7. Select the type of detector from the [Type] drop-down list.
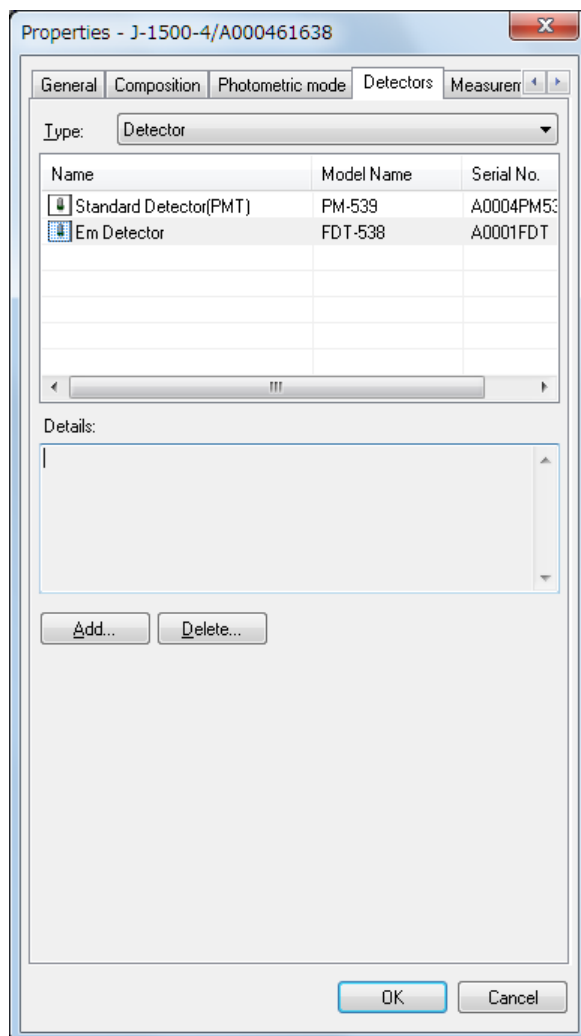
Figure 3.7 [Detectors] tab in [Properties] dialog box

Table 3.1 Accessories

Type
Standard WL Detector (PMT): PM-539
Extended WL Detector (ExPMT): EXPM-531
Extended WL Detector (InGaAs): InGaAs-532
FDCD Detector (PMT): PMJ-534
FDCD Detector (ExPMT): EXPML-535
FDCD Detector (InGaAs): EXLGL-536
FL Intensity Detector : FDT-538

For J-1100, only the dedicated wavelength range expansion detector (PMT) can be selected.

(2) Click the <Add...> button to display the dialog box in Fig. 3.8.
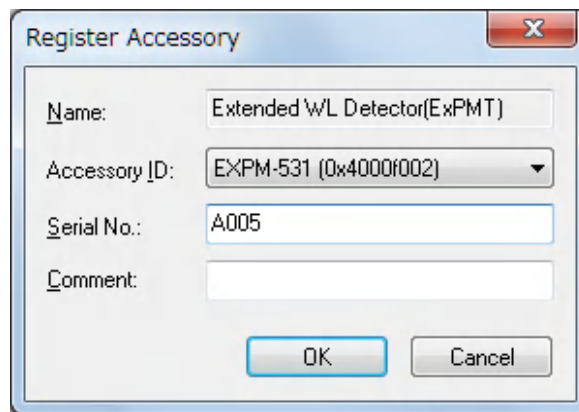
Figure 3.8 [Register Accessory] dialog box

(3) [Name] is automatically entered by selecting the accessory in the [Accessory ID] drop-down list. Type the serial number and a comment as required, and then click the <OK> button to register the accessory and display it in the list of registered accessories (see Fig.3.9).
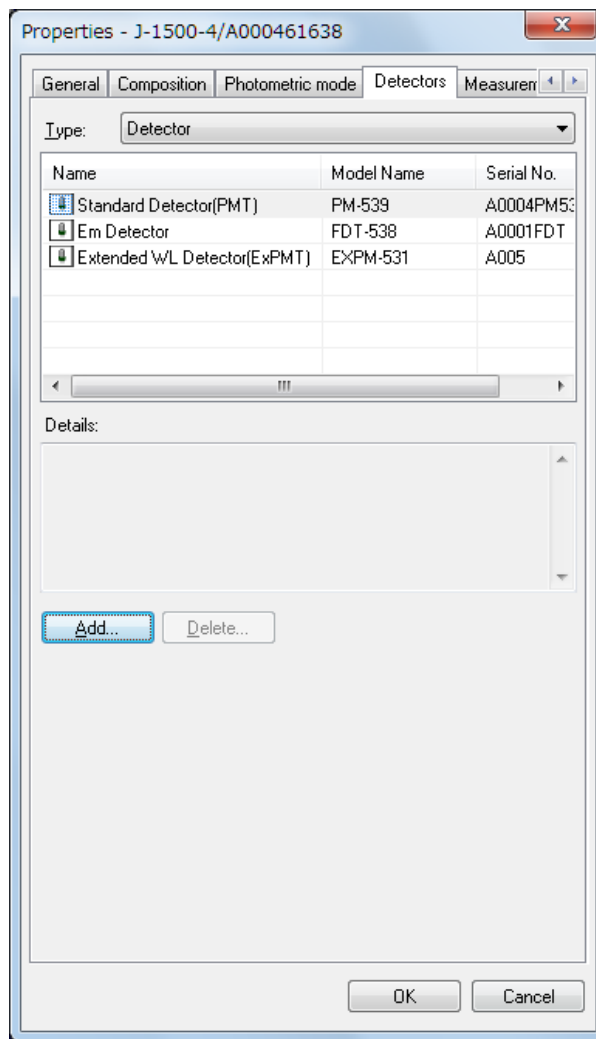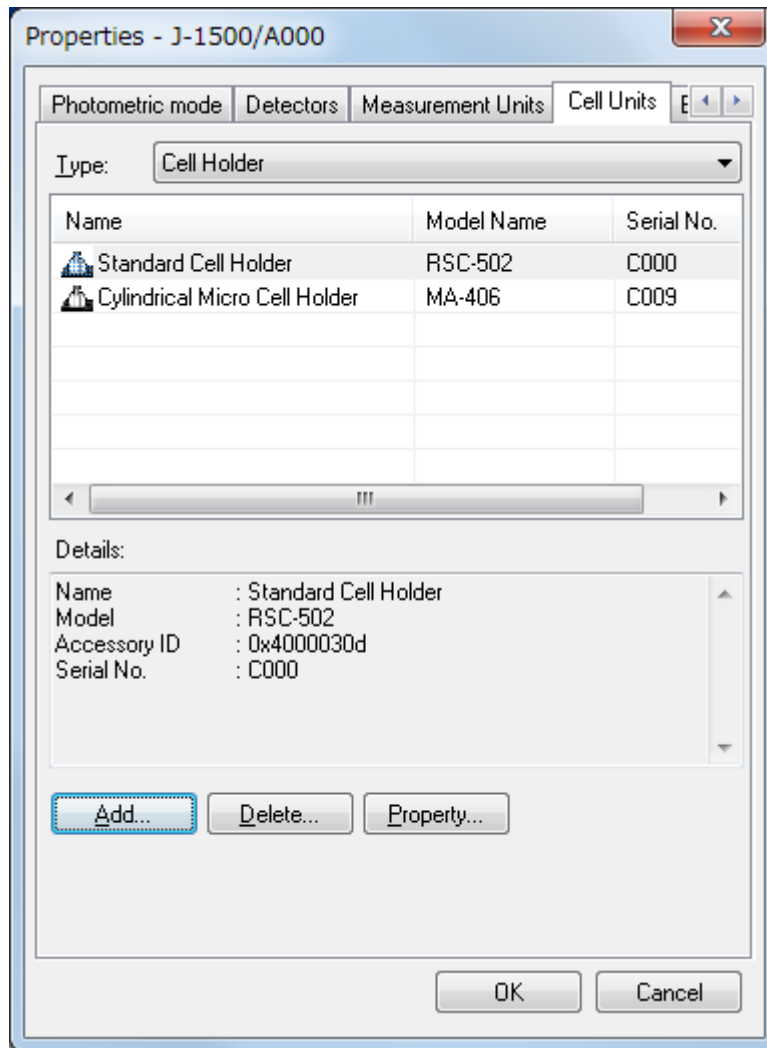
Figure 3.9 [Detectors] tab in [Properties] dialog box

3.3.2.2   Measurement Units

This section describes the procedure for registration of measurement units used with the CD spectrometer. For J-1100, this tab is not displayed.

(1)   Click the [Measurement Units] tab in Fig. 3.10. Select the type of measurement unit from the [Type] drop-down list.
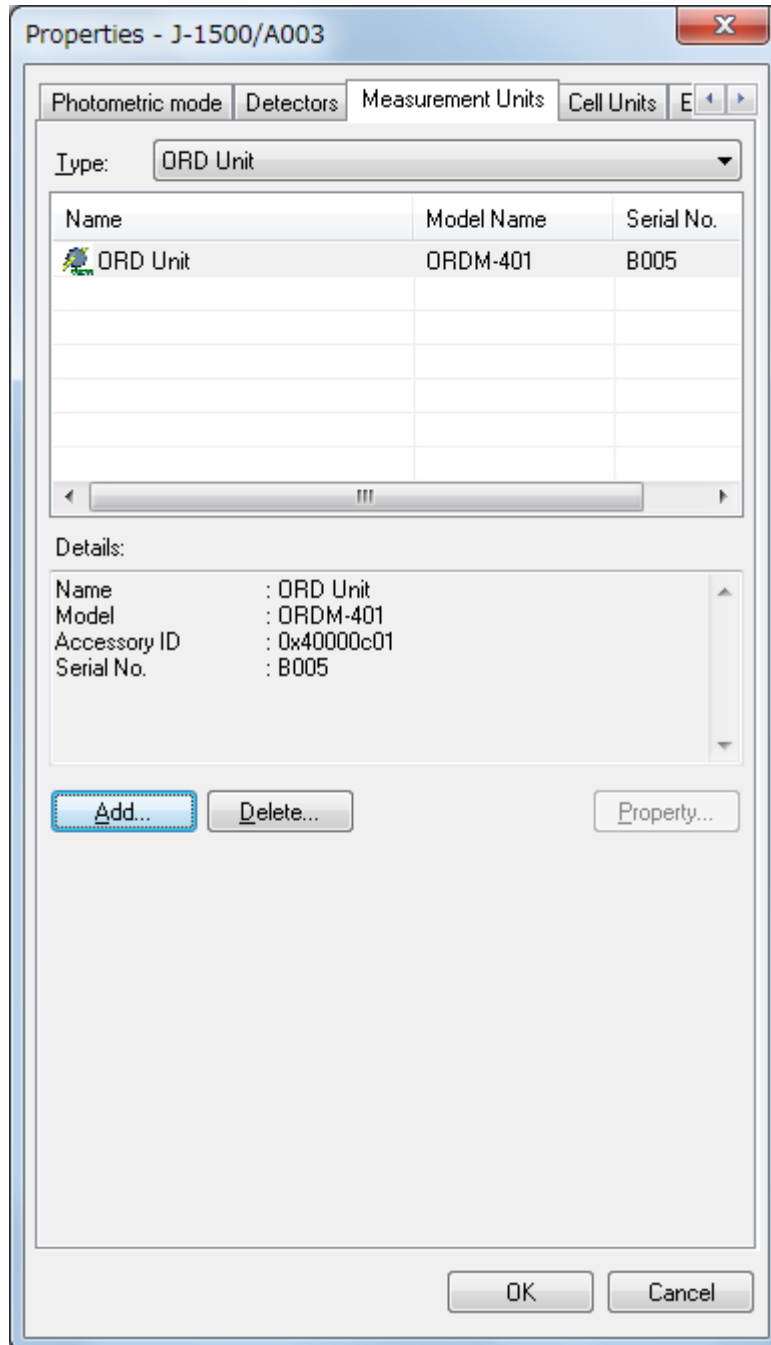
Figure 3.10 [Measurement Units] tab in [Properties] dialog box

Table 3.2 Accessories

Type
ORD Attachment
Fluorescence Monochromator

Click the <Add...> button to display the dialog box in Fig. 3.11.
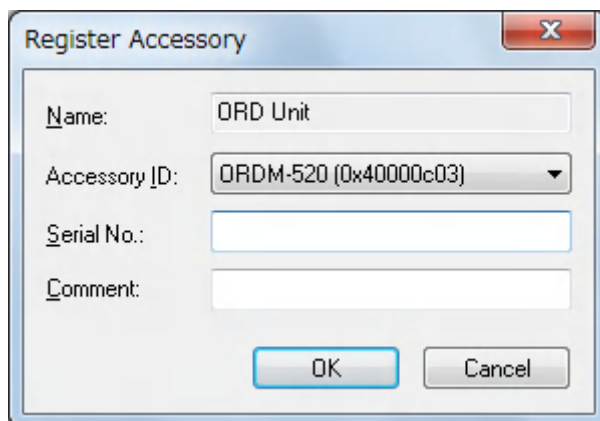
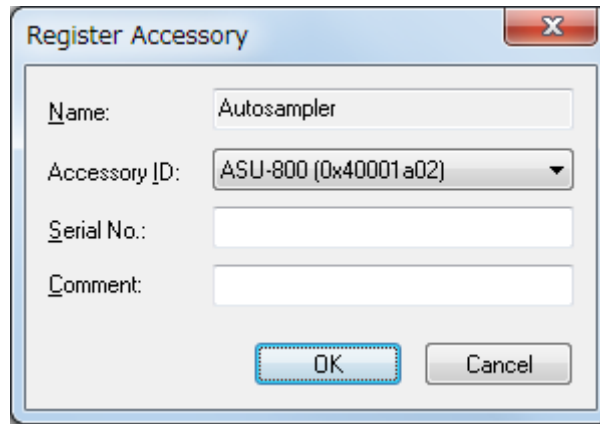Figure 3.11 [Register Accessory] dialog box

[Name] is automatically entered by selecting the accessory in the [Accessory ID] drop-down list. Type the serial number and a comment as required, and then click the <OK> button to register the accessory and display it in the list of registered accessories (see Fig. 3.12).
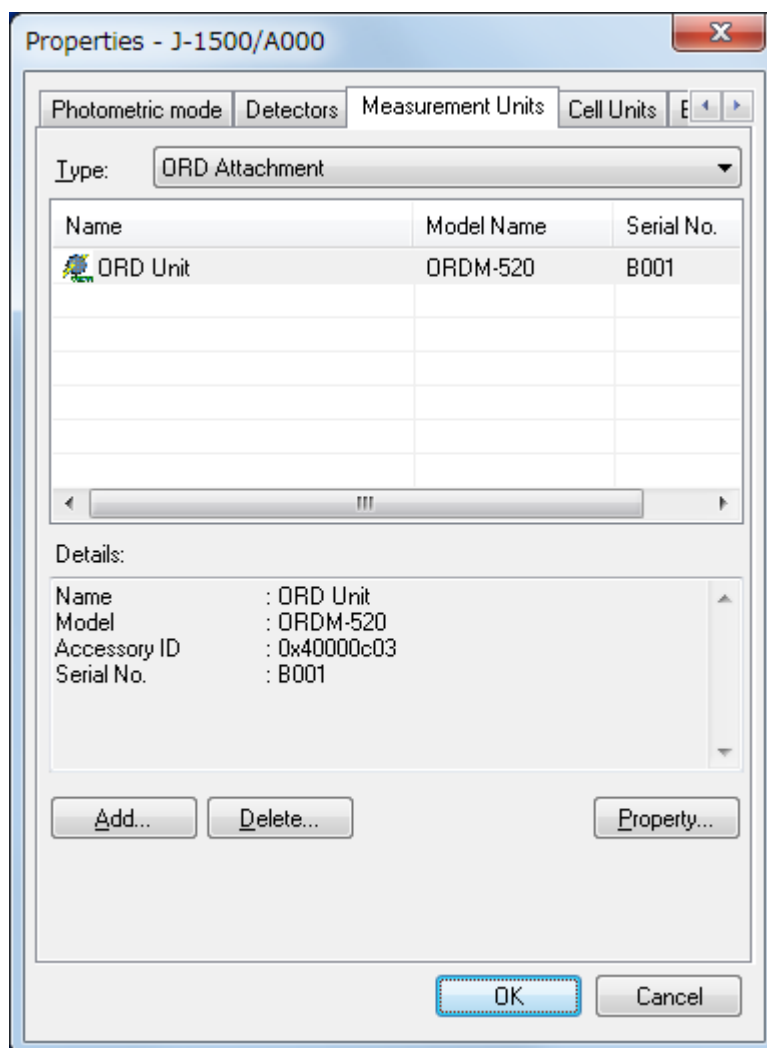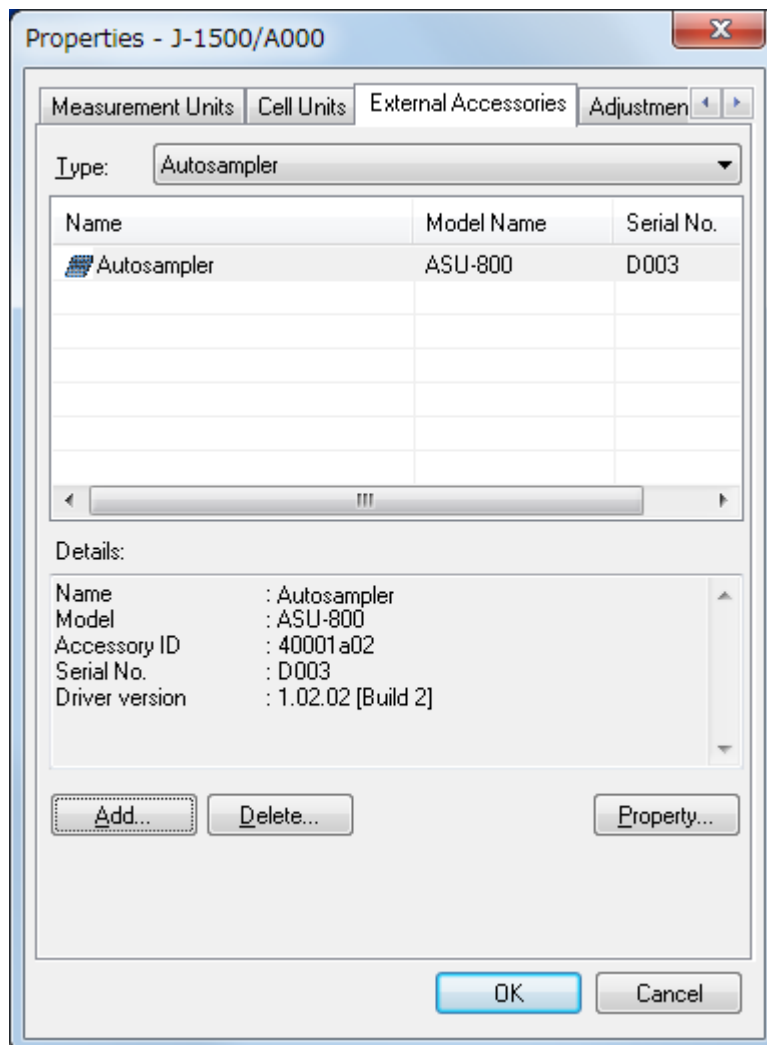

Figure 3.12 [Measurement Units] tab in [Properties] dialog box

3.3.2.3 Cell Units

This section describes the procedure for registration of cell units used with the CD spectrometer.

(1) Click the [Cell Units] tab in Fig. 3.13. Select the type of cell unit from the [Type] drop-down list.
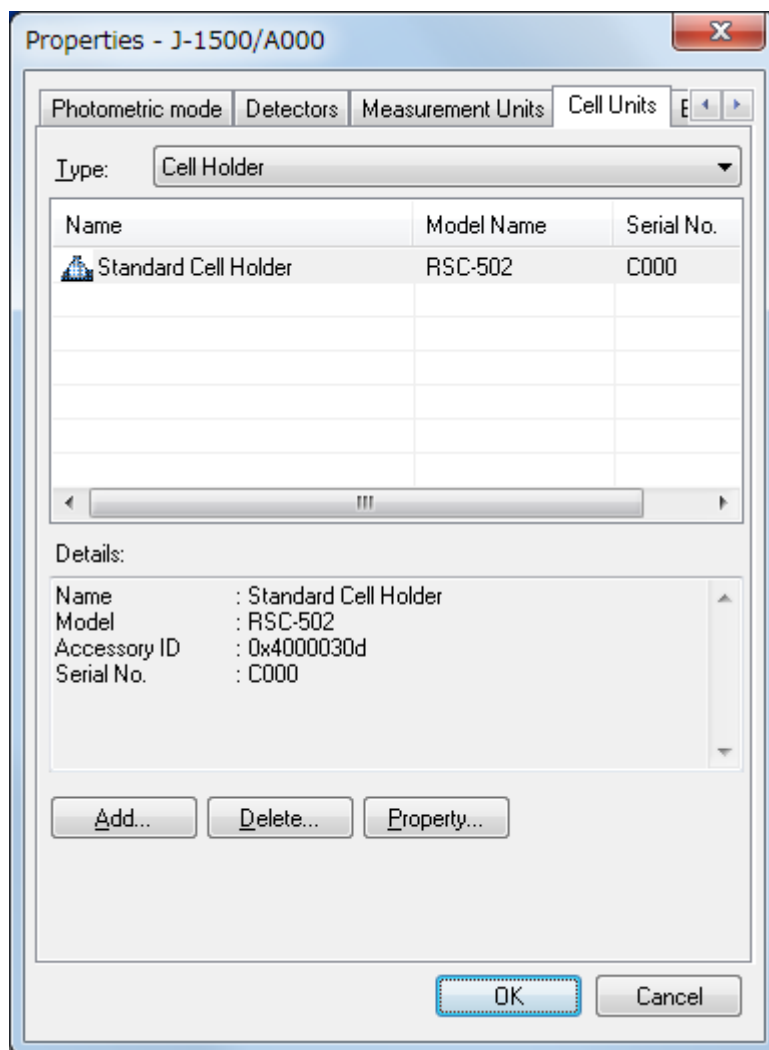
Figure 3.13 [Cell Units] tab in [Properties] dialog box

Table 3.3 Accessories

Type
Cell Holder
Temperature Controller
Flow Cell
Integration Sphere
FDCD Attachment
Double Beam UV Attachment
MCD Controller
Stopped Flow Controller
Cryostat Holder
High Temp. Cell Unit

For J-1100, only the cell holder and temperature controller can be selected.

(2) Click the <Add...> button to display the dialog box in Fig. 3.14.
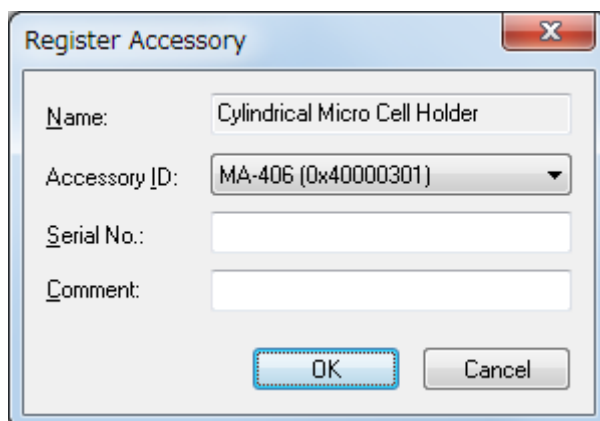
Figure 3.14 [Register Accessory] dialog box

(3) [Name] is automatically entered by selecting the accessory in the [Accessory ID] drop-down list. Type the serial number and a comment as required, and then click the <OK> button to register the accessory and display it in the list of registered accessories (see Fig. 3.15).

Figure 3.15 [Cell Units] tab in [Properties] dialog box

3.3.2.4 External Accessories

This section describes the procedure for registration of external accessories used with the CD spectrometer. For J-1100, this tab is not displayed.

(1)   Click the [External Accessories] tab in Fig. 3.16. Select the type of external accessory from the [Type] drop-down list. For-1100, the [External Accessories] tab is not displayed.
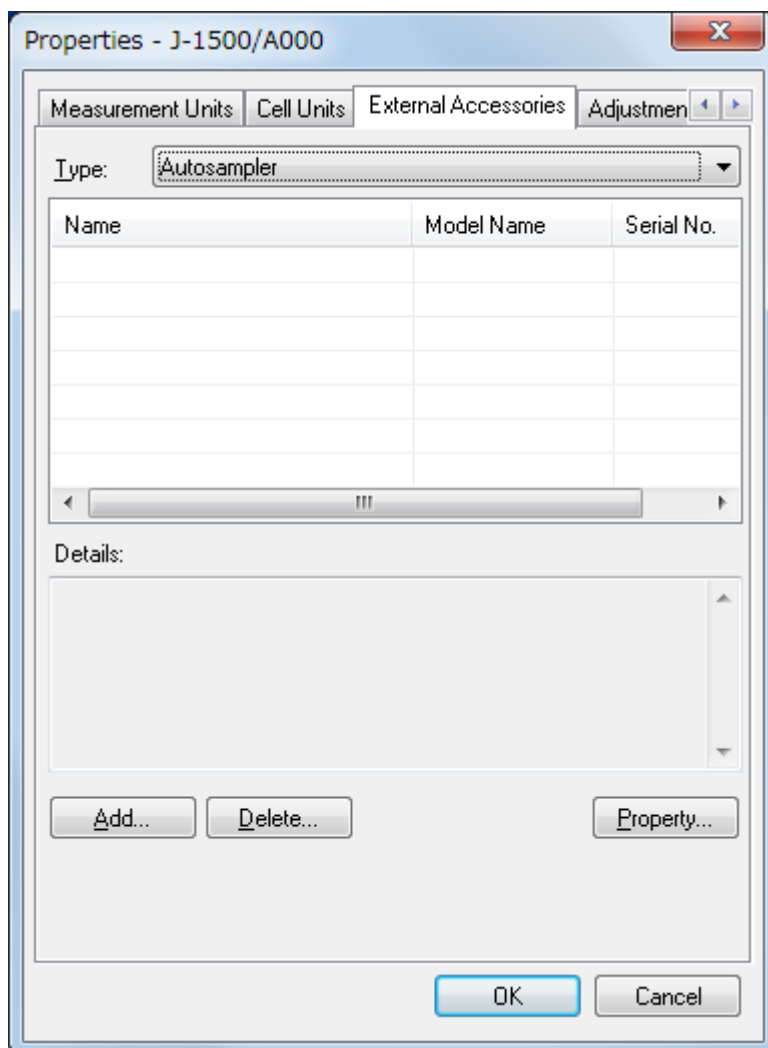
Figure 3.16 [External Accessories] tab in [Properties] dialog box

Table 3.4 Accessories

Type
Automatic Titrator
Autosampler

(2) Click the <Add...> button to display the dialog box in Fig. 3.17.

Figure 3.17 [Register Accessory] dialog box

(3) [Name] is automatically entered by selecting the accessory in the [Accessory ID] drop-down list. Type the serial number and a comment as required, and then click the <OK> button to register the accessory and display it in the list of registered accessories (see Fig.3.18).

Figure 3.18 [External Accessories] tab in [Properties] dialog box

3.4 Actions of [Spectra Manager] When Recognizing an Accessory

This section describes the actions of [Spectra Manager] running a measurement program when an automatically-recognized accessory with registered programs is attached to or removed from the CD spectrometer.

Note: Do not attach/remove an automatically-recognized accessory while the program is displaying a dialog box or message.

3.4.1 When an Automatically-Recognized Accessory is Attached

When an automatically-recognized accessory is attached, a dialog box stating "An accessory has been attached" is displayed, and information on that accessory is displayed on the accessory bar.
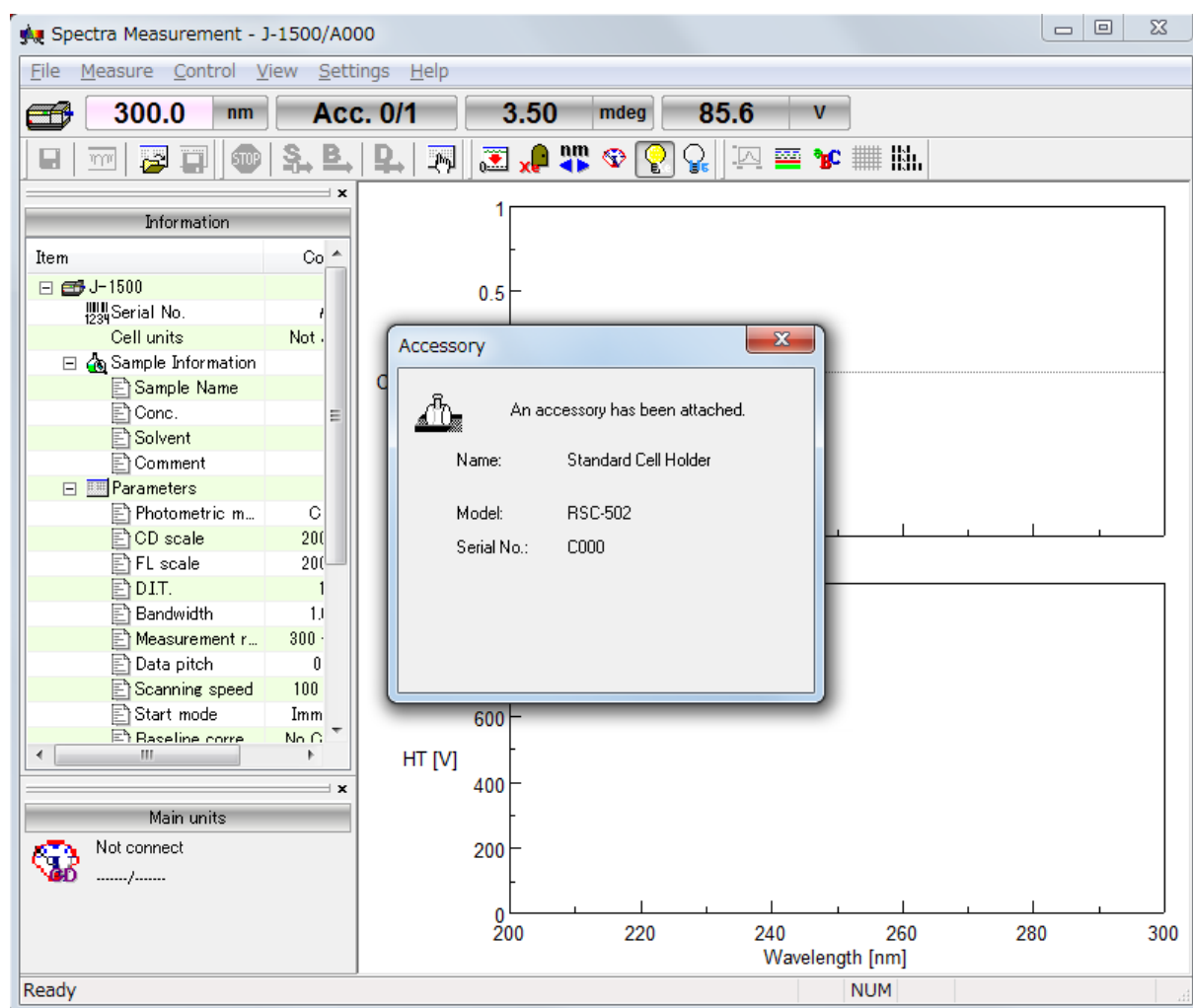
Figure 3.19 Message when an automatically-recognized accessory is being attached while [Spectra Manager] and a measurement program are running

3.4.2 When the Automatically-Recognized Accessory is Removed

When an automatically-recognized accessory is removed, a dialog box stating "An accessory was removed" is displayed, and information on that accessory disappears from the accessory bar.
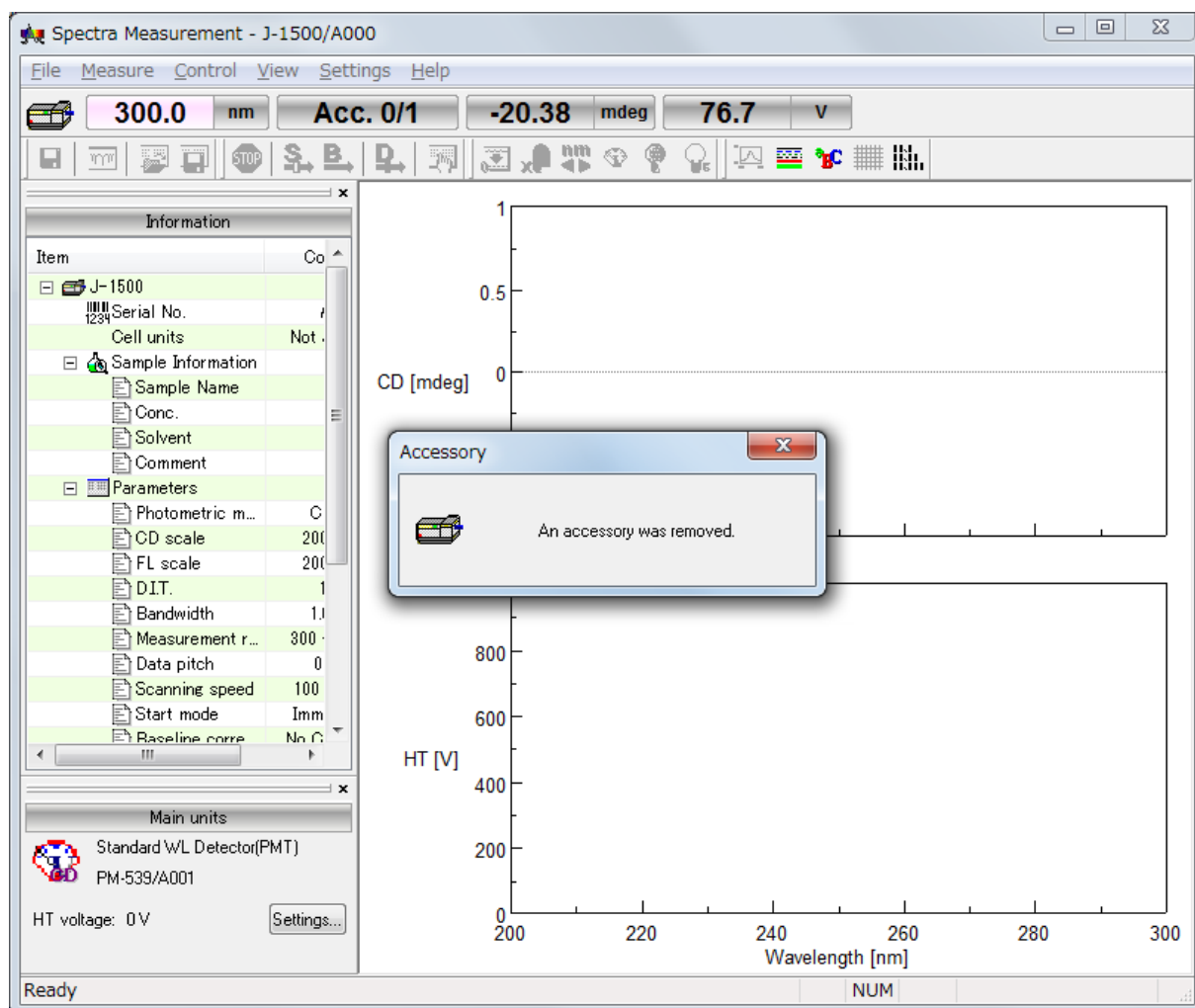
Figure 3.20 Message when an automatically-recognized accessory is removed while [Spectra Manager] and a measurement program are running

43

3.5   Status Display for the CD Spectrometer

This section describes the display of the CD spectrometer status in a measurement program.
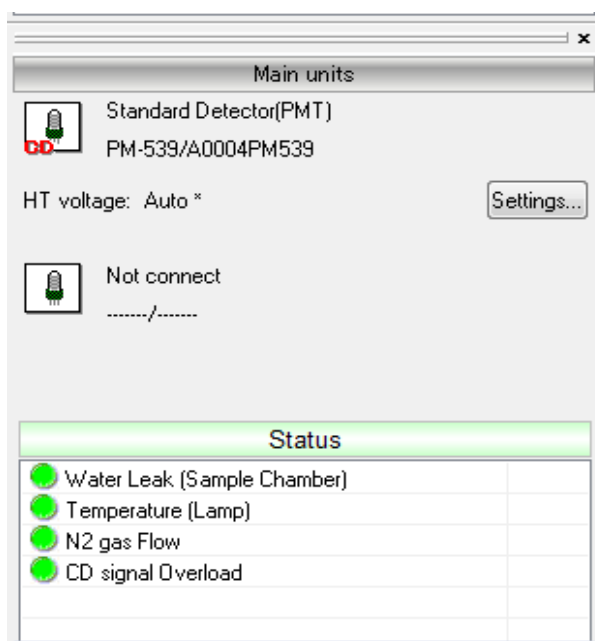
Figure 3.21 Status of CD spectrometer

Water Leak (Sample Chamber)	When water leakage occurs in the sample compartment, the green indicator in the status box turns red. A stop valve, an optional accessory, automatically prevents water from leaking.
Temperature (Lamp)	When the light source temperature exceeds 80 °C, the green indicator turns red and the light source is turned off automatically.
N_2 gas Flow	When the nitrogen flow rate is less than the specified value, the green indicator turns red. This item is displayed only when the [Manually with sensor] or [Automatic (PC control)] flow meter is used.
	Note 1: For the [Manually with sensor] type, the sensor position can be changed and the flow rate can be specified. *Note 2: For the [Automatic (PC control)] type, when the flow rate is less than the idling flow rate specified in the [Administrative Tools] program, the green indicator turns red.*
CD signal Overload	When the CD signal exceeds the upper limit of the measurement range specified by [CD scale] or [FL scale] in the [Parameters] dialog box, the green indicator turns red. Specify a larger CD or FL scale.

4. Introduction to the [Spectra Measurement] Program

This chapter describes how to use the [Spectra Measurement] program, including procedures for starting the [Spectra Measurement] program, measuring the spectrum of a sample, and saving and printing data, for practice in operating a JASCO CD spectrometer.

Explanations of the parameters have been kept to a minimum, with a focus on the flow of operations. Follow the measurement procedures outlined below for practice in operating the CD spectrometer. Refer to Chapter 6 "[Measure] Menu Program Reference" for details about toolbar icons and menus, and to Chapter 7 "[Spectra Measurement] Program Menu Reference" for details about the [Parameters...] command.

4.1   Procedures for the [Spectra Measurement] Program

This section describes procedures ranging from measuring a CD spectrum of an ammonium d-10-camphorsulfonate solution to saving and printing the measurement data.

Starting the [Spectra Measurement] Program   Refer to Section 4.2
  ↓
Specifying Measurement Parameters   Refer to Section 4.3
  ↓
Measuring the Sample   Refer to Section 4.4
  ↓
Saving Spectra   Refer to Section 4.5
  ↓
Printing Results   Refer to Section 4.6
  ↓
Exiting the Program   Refer to Section 4.7

4.2   Starting the [Spectra Measurement] Program

To start the program, double-click [Spectra Measurement] from the [Instrument] list of [Spectra Manager]. The window in Fig. 4.1 is displayed.
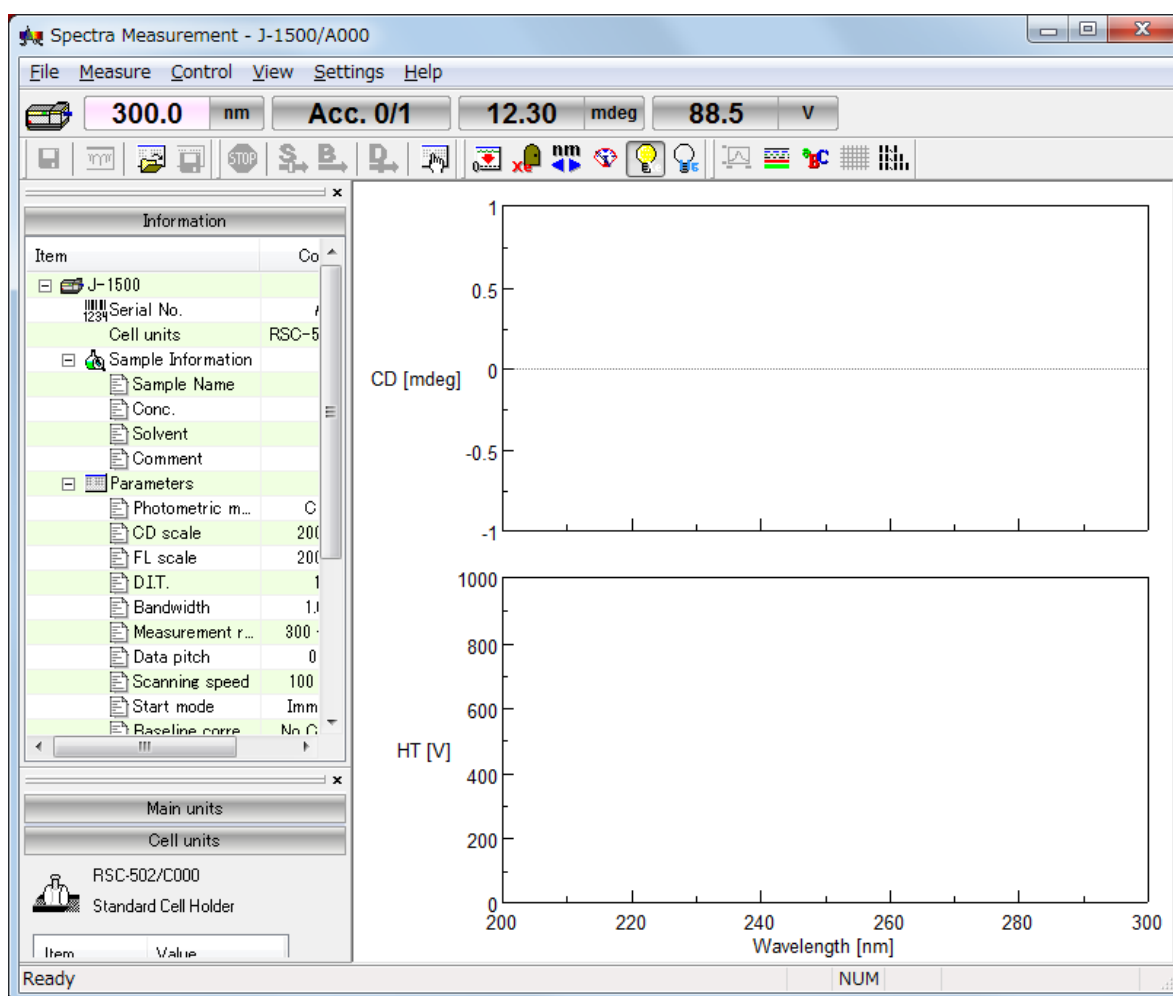
Figure 4.1 [Spectra Measurement] window

4.3 Specifying Measurement Parameters

(1) Select [Parameters...] from the [Measure] menu (or click the ⟨button⟩ to display the dialog box in Fig. 4.2. The [Parameters] dialog box contains the [General], [Control], [Information], and [Data] tabs. The [General] tab is open by default in the [Parameters] dialog box. The page can be changed by clicking each tab at the top of the dialog box.

Note 1: In the CFR version, parameter history is automatically saved. It is therefore necessary to specify or open the parameters before measurement.
Note 2: In the CFR version, Managers or Analysts authority is required to specify parameters.

---

(2) The parameters can be switched between two modes: Basic mode and Advanced mode. In Basic mode, the choice of parameters is partially limited. In Advanced mode, each parameter is specified individually. The parameters described in this section are specified in Basic mode. To switch between Basic and Advanced modes, click the <Basic Mode> or <Advanced Mode> button.

(3) Specify the measurement parameters in the [General] tab as follows.

Figure 4.2 [General] tab in [Parameters] dialog box

Photometric mode
  [Channels Num]   2

[Channel 1]	[CD]
[Channel 2]	[HT]
[CD scale]	200 mdeg/1.0 dOD
[FL scale]	200 mdeg/1.0 dOD
[D. I. T.]	2 sec
[Bandwidth]	1 nm
[Start]	350 nm
[End]	220 nm
[Data pitch]	0.1 nm
[Start mode]	[Immediately]
[Scanning mode]	[Continuous]
[Scanning speed]	100 nm/min
Accumulation/cycle	
[Accumulation]	Deselected
[No. of accumulations]	1

Note: Select the appropriate [CD scale] for the sample to be measured.

Parameters can be set by using two methods: selecting from available options and specifying numeric values and characters. An example of setting parameters by using each method is given below.

1) Selecting from available options

The following example describes how to select the CD scale. Select the CD scale from the available options in the [CD scale] drop-down list. Click the arrow to the right of the box to display the full list of [CD scale] options (see Fig. 4.3). Select the desired CD scale (in this example, 200 mdeg/0.2 dOD).
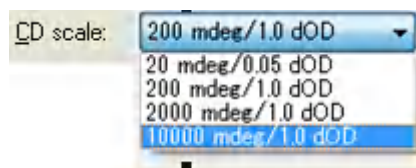
Figure 4.3 [CD scale] drop-down list

2) Specifying numeric values and characters

The following example describes how to specify the start wavelength. Click the [Start] text box to edit the start wavelength. When the cursor appears in the text box, values can be entered. Type the desired wavelength (in the example in Fig. 4.2, 350 nm) in the text box to set the start wavelength.

(4)   Specify the measurement parameters in the [Control] tab as follows.
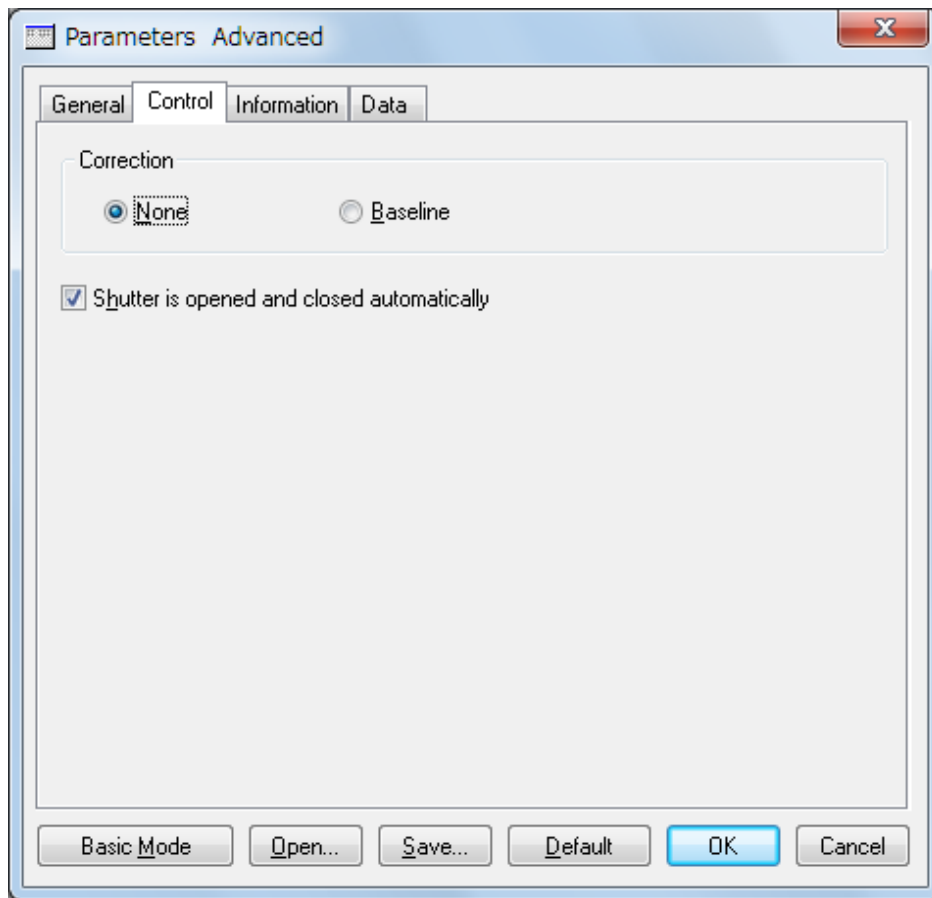
Figure 4.4 [Control] tab in [Parameters] dialog box

Correction   [None]
[Shutter is opened and closed automatically]   Selected

(5) Click the [Information] tab. Type information in the [Sample name], [Operator], [Division], [Comment], [Concentration] and [Solvent] text boxes as desired. The information entered here is saved as comment information together with the spectral data when the spectra are saved.
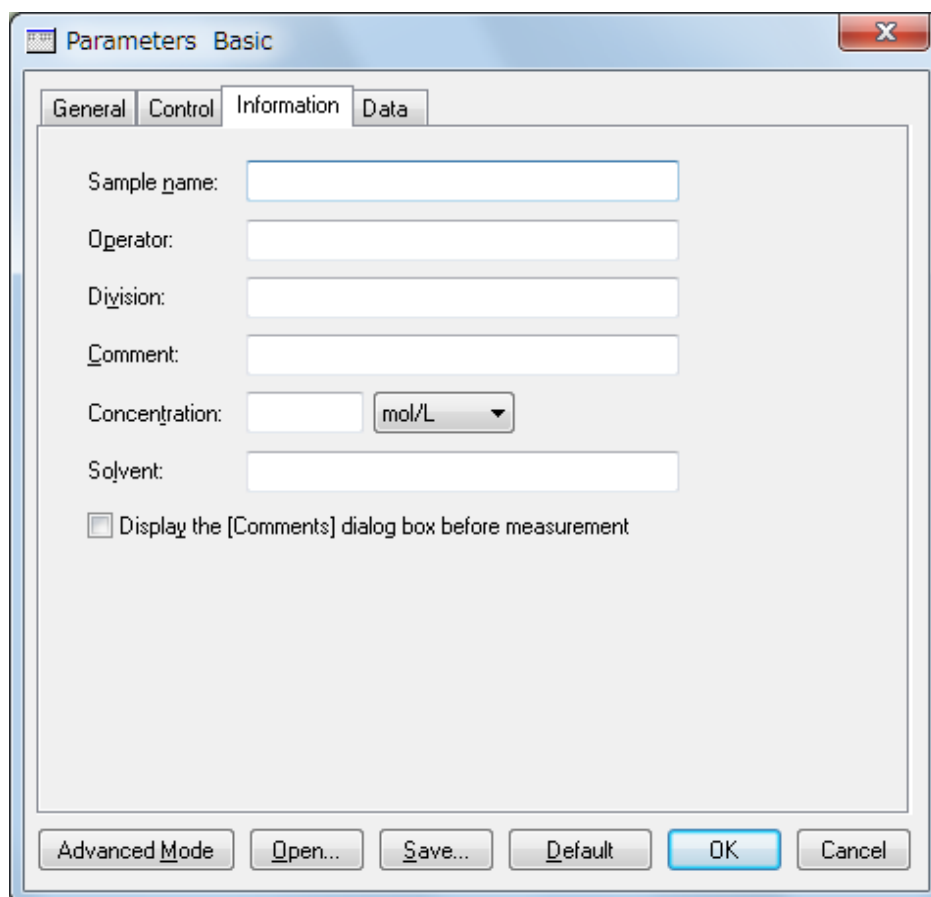
Figure 4.5 [Information] tab in [Parameters] dialog box

[Sample name]	Enter as desired (maximum 63 characters).
[Operator]	Enter an operator name (maximum 63 characters).
[Division]	Enter a division name for the operator (maximum 127 characters).
[Comment]	Enter as desired (maximum 127 characters).
[Concentration]	Enter as desired.
[Solvent]	Enter as desired (maximum 127 characters).
[Display the [Comments] dialog box before measurement]	Deselected

Note: In the CFR version, the [Operator] and [Division] text boxes cannot be changed by the user.

(6) Click the [Data] tab. Specify the [Save data], [Send data], and [Print] options for the measured spectrum. In this example, select the [To Spectra Analysis] check box.
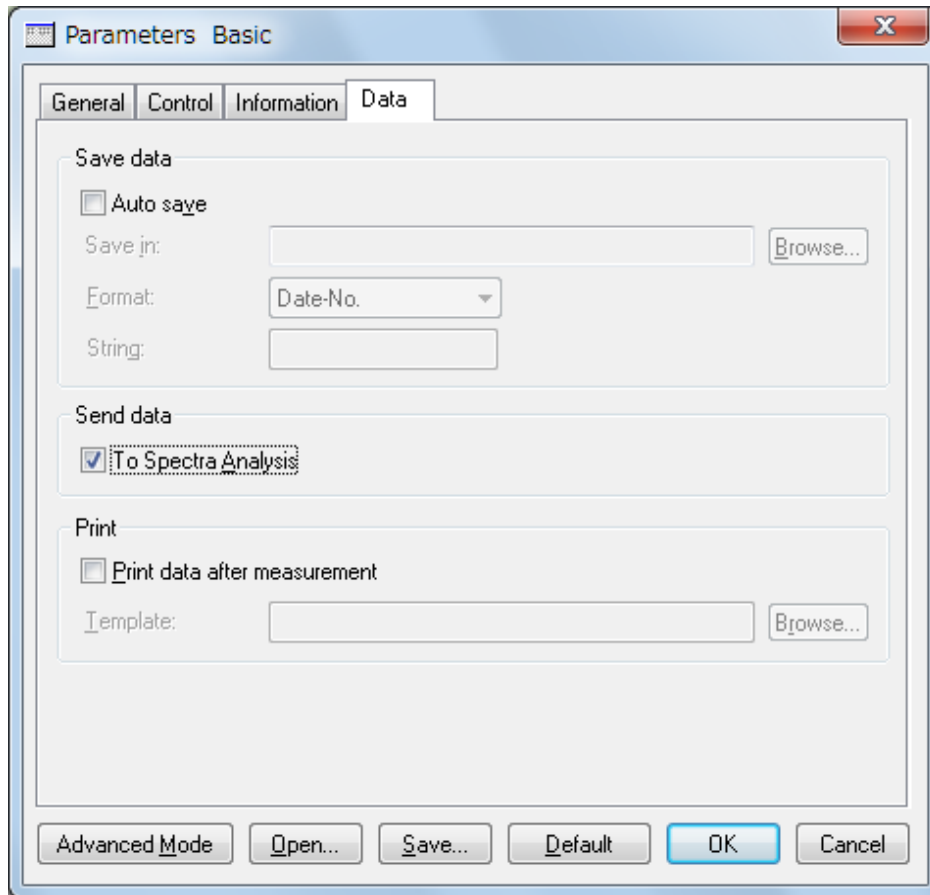
Figure 4.6 [Data] tab in [Parameters] dialog box

[Auto save]	Deselected
[To Spectra Analysis]	Selected
[Print data after measurement]	Deselected

(7) In the CFR version, always save changes to the parameters. Click the <<u>S</u>ave...> button to display the dialog box in Fig. 4.7.
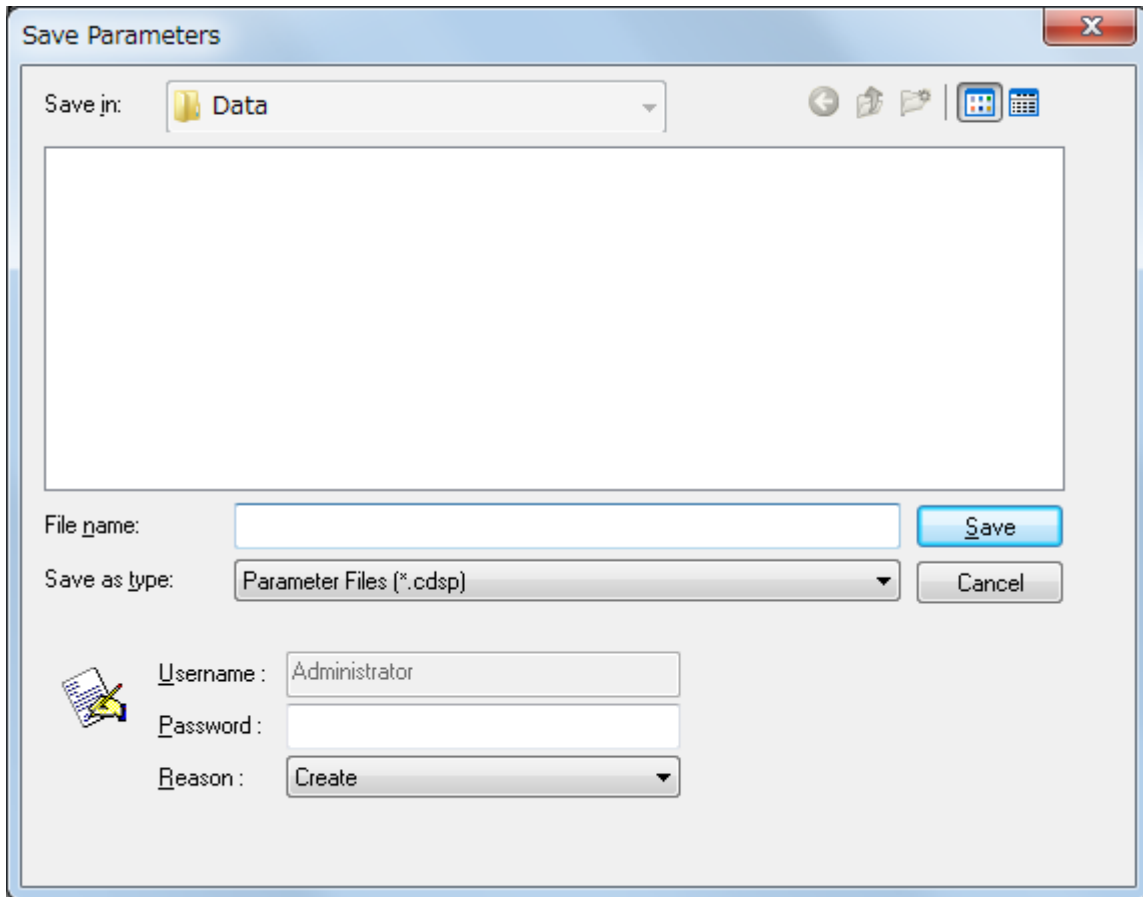
Figure 4.7 [Save Parameters] dialog box

(8) After entering the file name, type a password and then click the <Save> button.

Note: When the parameters have not been saved, the following message is displayed.
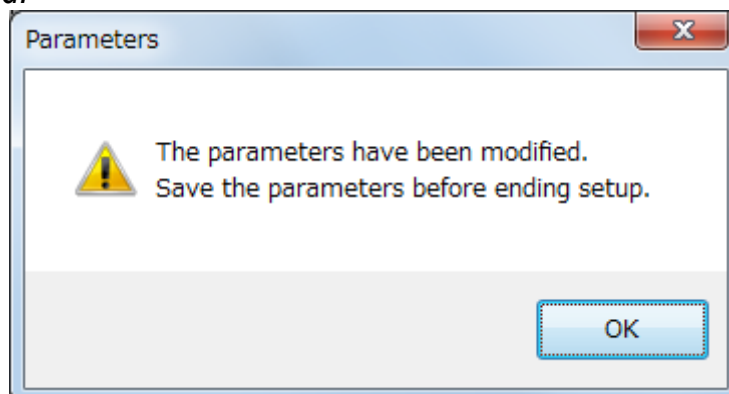
Figure 4.8 Message when the parameters have not been saved

4.4 Measuring the Sample

(1) Inserting the sample

Fill the cell with the sample, place the cell in the cell holder, and then close the lid of the sample compartment.

(2) Measuring the sample

Select [Sample Measurement] from the [Measure] menu (or click the ![button] button) to measure the spectrum for the sample. The progress of the measurement is displayed in the window (see Fig. 4.9).
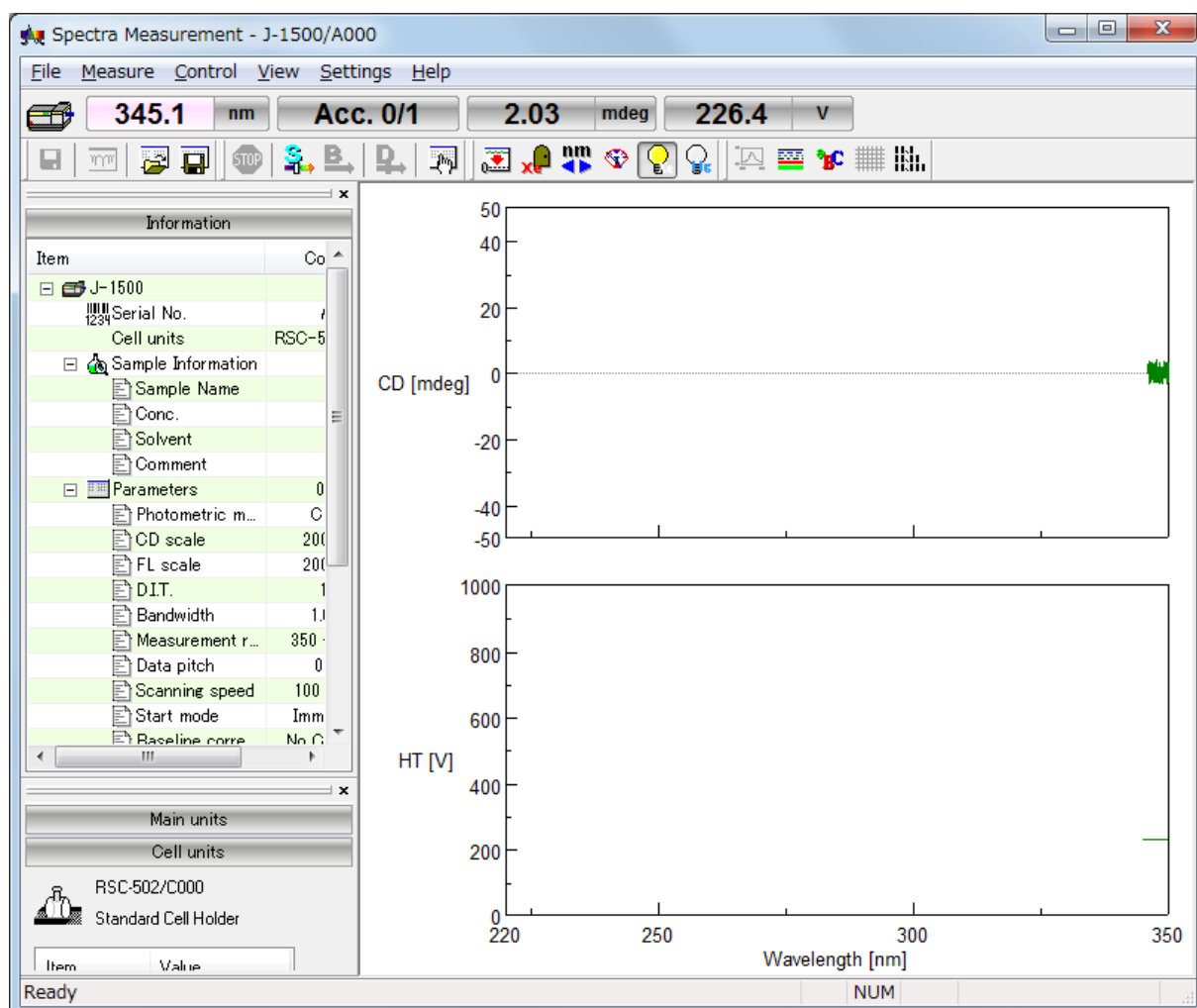
Figure 4.9 [Spectra Measurement] window

After measurement, the [Spectra Analysis] program starts and the measured data is displayed in a window. This window is called a "View". Figure 4.10 shows an example of a measured spectrum that has not yet been saved (Title bar: View <Memory-1>).

Note 1: When the [Spectra Analysis] program is already running, it is not automatically displayed as the active window after measurement. Click [Spectra Analysis] on the Windows task bar to display the program as the active window.
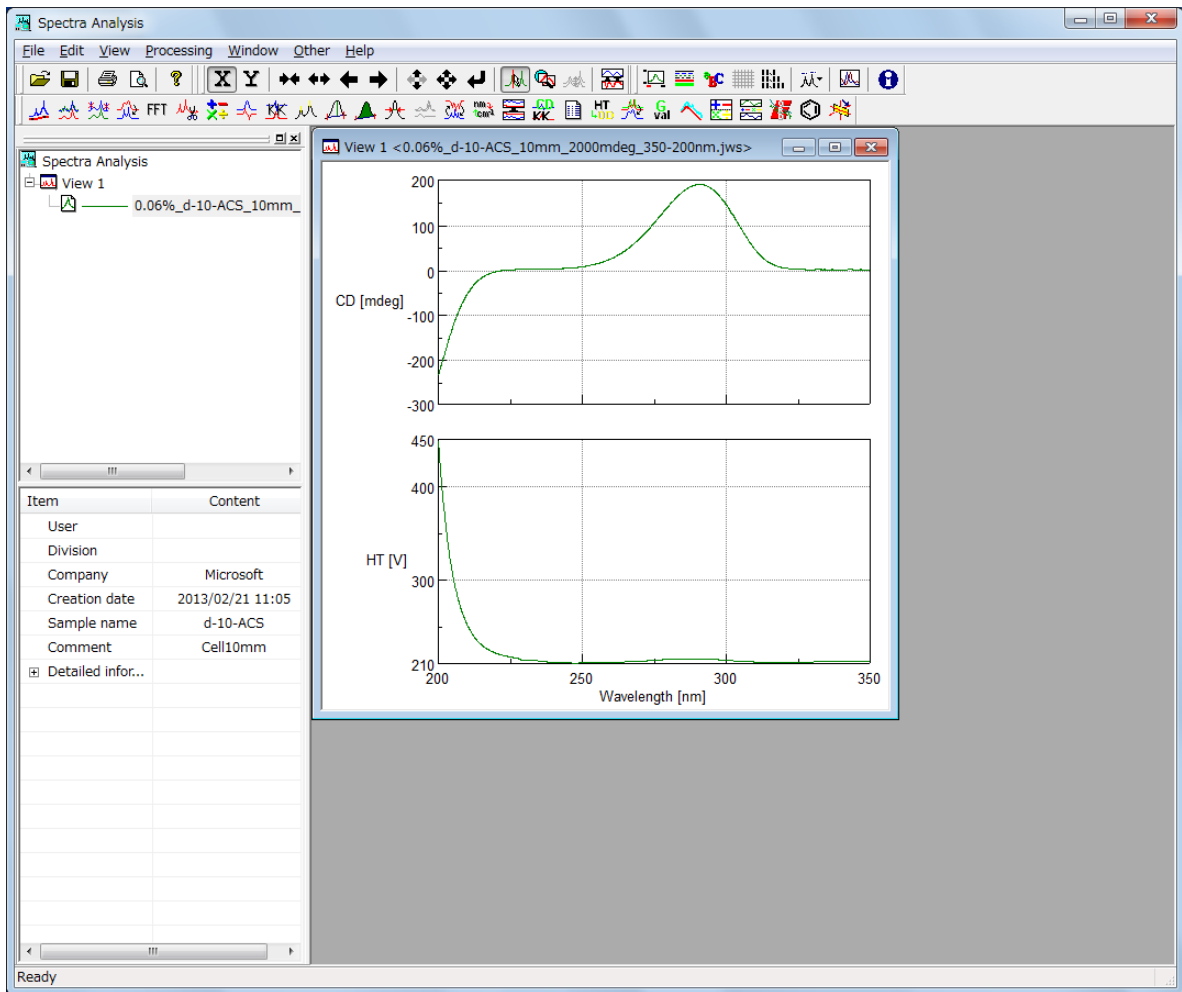
Figure 4.10 Spectrum View

4.5   Saving Spectra

This section describes the procedure for saving spectra using the [Spectra Analysis] program.

> *Note: Spectra can also be saved by selecting [Save Data...] from the [File] menu (or by clicking the 💾 button) in the [Spectra Measurement] program.*

(1)   Select [Save As...] from the [File] menu in the [Spectra Analysis] program to display the dialog box in Fig. 4.11.
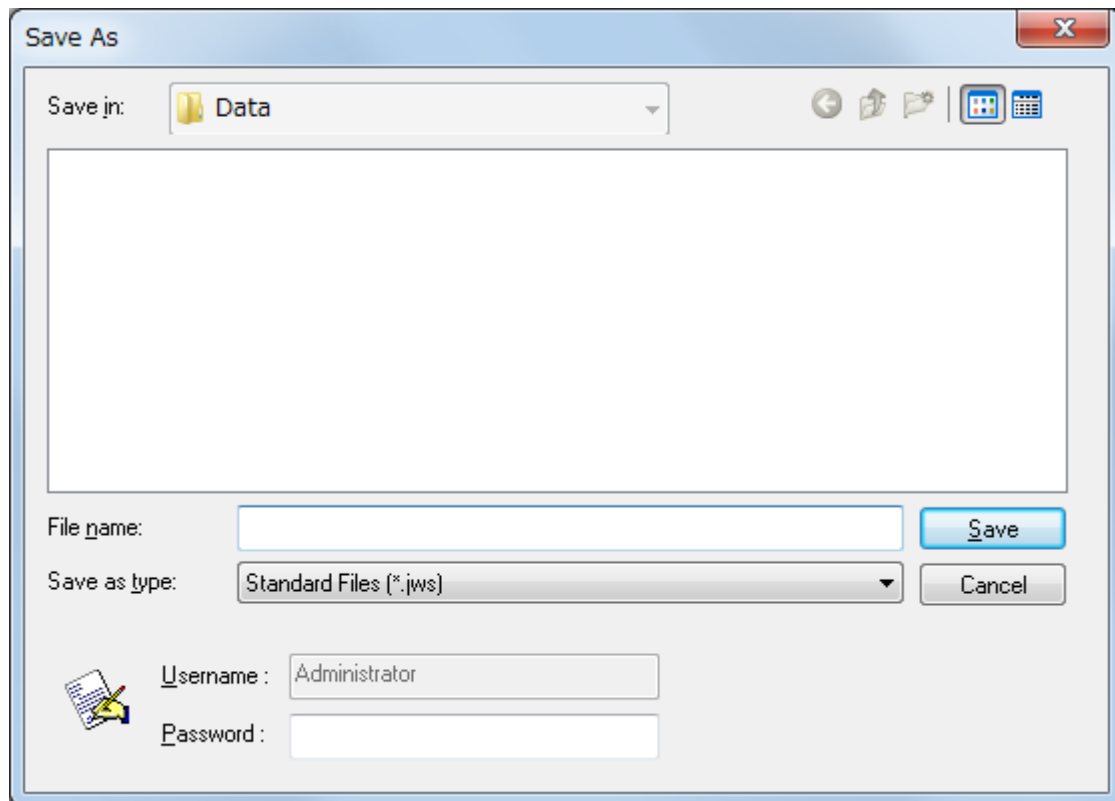
Figure 4.11 [Save As] dialog box

(2)   From the [Save in] drop-down list, select the folder in which to save the spectrum.

> *Note: In the CFR version, the [Save in] drop-down list cannot be used to select a folder in which to save the data. Folder selection is limited by Administrators using the [Administrative Tools] program. Refer to the [Administrative Tools] program manual for details.*

(3)   Type the file name in the [File name] text box. In this example, type "d-10-ACS" as the file name.

(4)   After entering the file name, type a password and then click the <Save> button.

(5)   The file name is appended with the extension ".jws" ("d-10-ACS.jws"), which is the standard file type.

(6)   After saving the data, the title bar of the View changes to "View (d-10-ACS.jws)".

55

> *Note:* *Refer to the [Spectra Analysis] program manual for details about saving spectra.*

4.6 Printing Results

Print the measured spectra using a connected printer as follows.

(1) Select [Print Setup...] from the [File] menu to display the dialog box in Fig. 4.12. The content of this dialog box varies depending on the connected printer. Configure the printer settings if necessary.
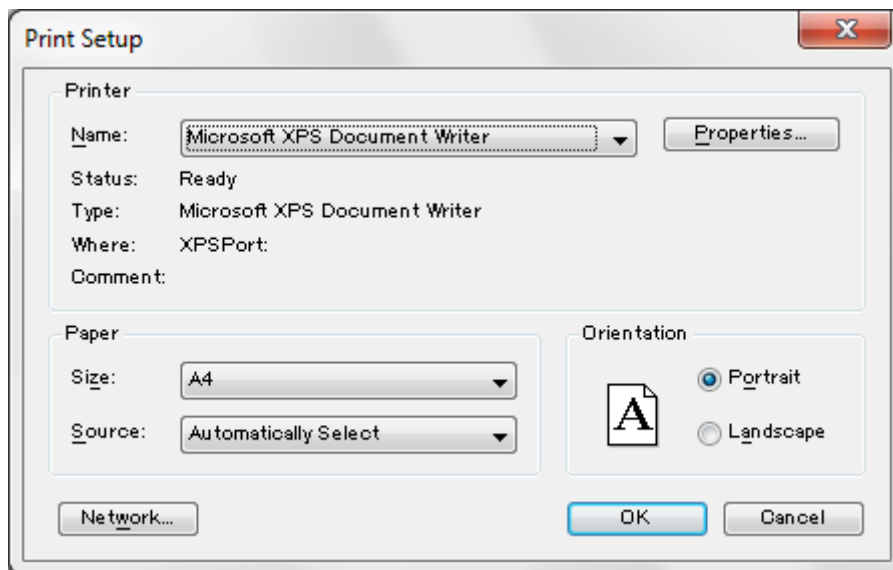
Figure 4.12 Example of [Print Setup] dialog box

(2) Select [Print...] from the [File] menu to print the data.

> *Note 1: Refer to the [Spectra Analysis] program manual for details about printing a spectrum.*
> *Note 2: In the CFR version, "Unsigned" will be watermarked on the printed page when no creation signature is assigned to the measurement data.*

4.7　Exiting the Program

(1)　Exiting the [Spectra Analysis] program

Select [Exit] from the [File] menu. The [Spectra Analysis] window closes, leaving the [Spectra Measurement] window displayed.

Note:　*When there are unsaved spectra in the window, a warning message is displayed. Perform the action recommended by the message. A message is displayed for each unsaved spectrum.*
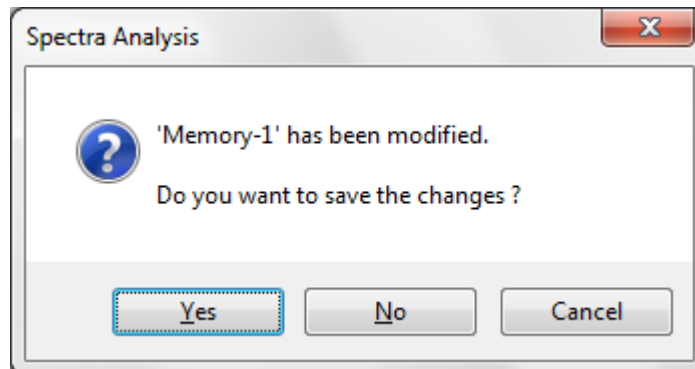
Figure 4.13 Message when data has not been saved

---

(2)　Exiting the [Spectra Measurement] program

Select [Exit] from the [File] menu to close [Spectra Measurement], leaving the [Spectra Manager] window displayed.

(3)　Exiting the [Spectra Manager] program

Select [Exit] from the [Program] menu.

(4)　Exiting *Windows*

Exit *Windows* in accordance with standard *Windows* operation procedures.

(5)　Turning off the PC and CD spectrometer

First, turn off the PC and monitor. Do not forget to turn off the monitor.

Ensure that the sample compartment is empty, and then turn off the CD spectrometer.

5. Introduction to the [Time Course Measurement] Program

This chapter describes how to use the [Time Course Measurement] program, including procedures for starting the [Time Course Measurement] program, measuring the spectrum of a sample, and saving and printing data, for practice in operating a JASCO CD spectrometer. Explanations of the parameters have been kept to a minimum, with a focus on the flow of operations. Follow the measurement procedures outlined below for practice in operating the CD spectrometer. Refer to Chapter 6 "[Measure] Menu Program Reference for details about toolbar icons and menus, and refer to Chapter 8 "[Time Course Measurement] Program Menu Reference" for details about the [Parameters...] command.

5.1 Procedures for the [Time Course Measurement] Program

This section describes procedures ranging from measuring CD time-course data for an ammonium d-10-camphorsulfonate solution to saving and printing the measurement data.

Starting the [Time Course Measurement] Program   Refer to Section 5.2
    ↓
Specifying Measurement Parameters   Refer to Section 5.3
    ↓
Measuring the Sample   Refer to Section 5.4
    ↓
Saving Data   Refer to Section 5.5
    ↓
Printing Results   Refer to Section 5.6
    ↓
Exiting the Program   Refer to Section 5.7

5.2 Starting the [Time Course Measurement] Program

To start the program, double-click [Time Course Measurement] from the [Instrument] list of [Spectra Manager]. The window in Fig. 5.1 is displayed.
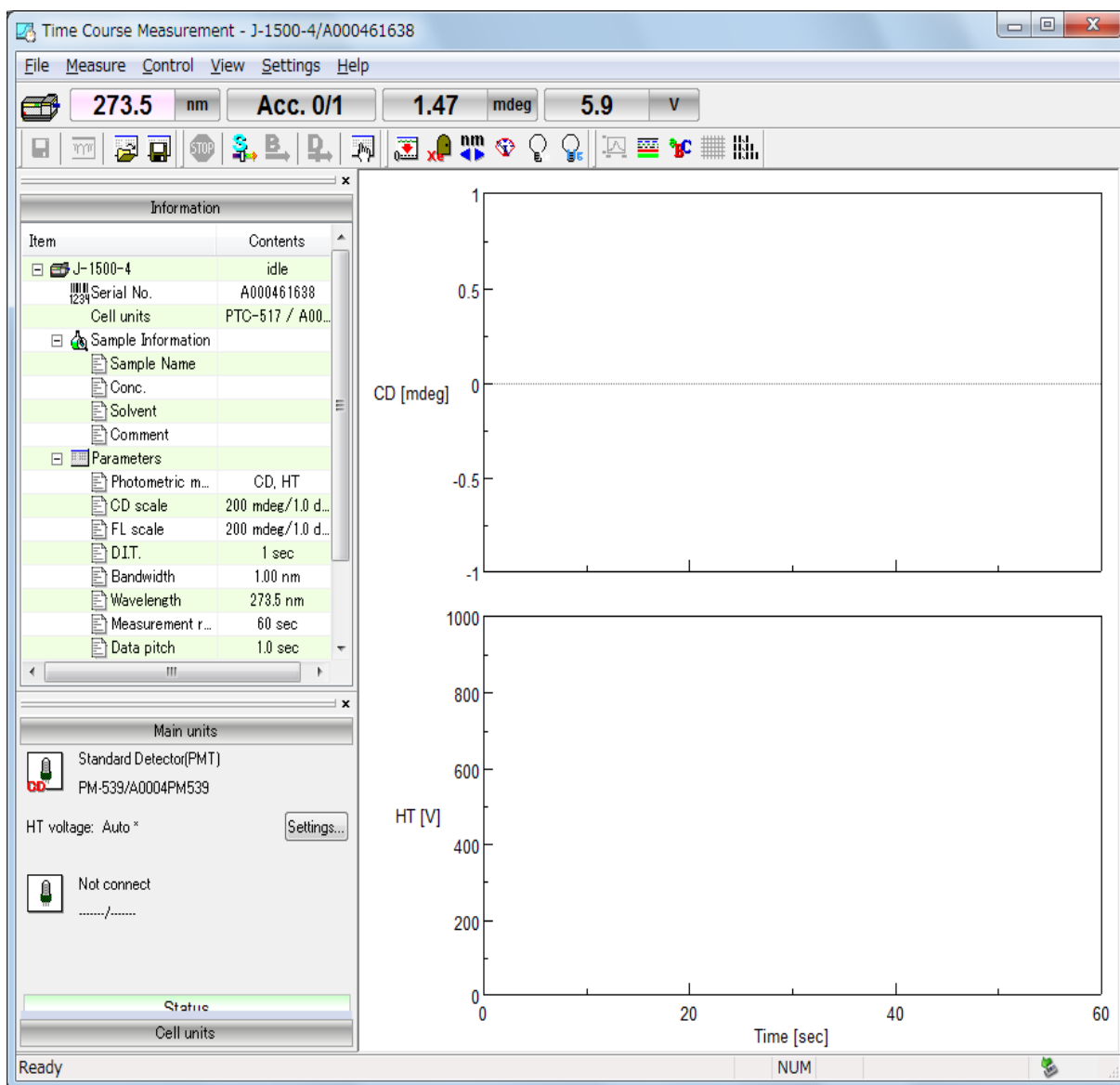
Figure 5.1 [Time Course Measurement] window

5.3   Specifying Measurement Parameters

(1)   Select [Parameters...] from the [Measure] menu (or click the ⬚ button) to display the dialog box in Fig. 5.2. The [Parameters] dialog box contains the [General], [Control], [Information], and [Data] tabs. The [General] tab is open by default in the [Parameters] dialog box. The page can be changed by clicking each tab at the top of the dialog box.

Note 1: In the CFR version, parameter history is automatically saved. It is therefore necessary to specify or open the parameters before measurement.
Note 2: In the CFR version, Managers or Analysts authority is required to specify parameters.

(2)   The parameters can be switched between two modes: Basic mode and Advanced mode. In Basic mode, the choice of parameters is partially limited. In Advanced mode, each parameter is specified individually. The parameters described in this section are specified in Basic mode. To switch between Basic and Advanced modes, click the <Basic Mode> or <Advanced Mode> button.

(3)   Specify the measurement parameters in the [General] tab as follows.

Figure 5.2 [General] tab in [Parameters] dialog box

    Photometric mode
      [Channels Num]   2
       [Channel 1]   [CD]

[Channel 2]	[HT]
[CD scale]	200 mdeg/1.0 dOD
[FL scale]	200 mdeg/1.0 dOD
[D. I. T.]	1 sec
[Bandwidth]	1 nm
[Wavelength]	291 nm
[Measuring time]	60 sec
[Data pitch]	1 sec
[Start mode]	[Immediately]

Note: Select the appropriate [CD scale] for the sample to be measured.

Parameters can be set by using two methods: selecting from available options and specifying numeric values and characters. An example of setting parameters using each method is given below.

1) Selecting from available options

The following example describes how to select the CD scale. Select the CD scale from the available options in the [CD scale] drop-down list. Click the arrow to the right of the box to display the full list of [CD scale] options (see Fig. 5.3). Select the desired CD scale (in this example, 200 mdeg/0.2 dOD).

CD scale: 200 mdeg/1.0 dOD
20 mdeg/0.05 dOD
200 mdeg/1.0 dOD
2000 mdeg/1.0 dOD
10000 mdeg/1.0 dOD
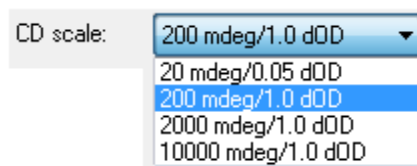
Figure 5.3 [CD scale] drop-down list

2) Specifying numeric values and characters

The following example describes how to specify the wavelength. Click the [Wavelength] text box to edit the wavelength. When the cursor appears in the text box, values can be entered. Type the desired wavelength (in the example in Fig. 5.2, 291 nm) in the text box to set the wavelength.

(4) Specify the measurement parameters in the [Control] tab as follows.
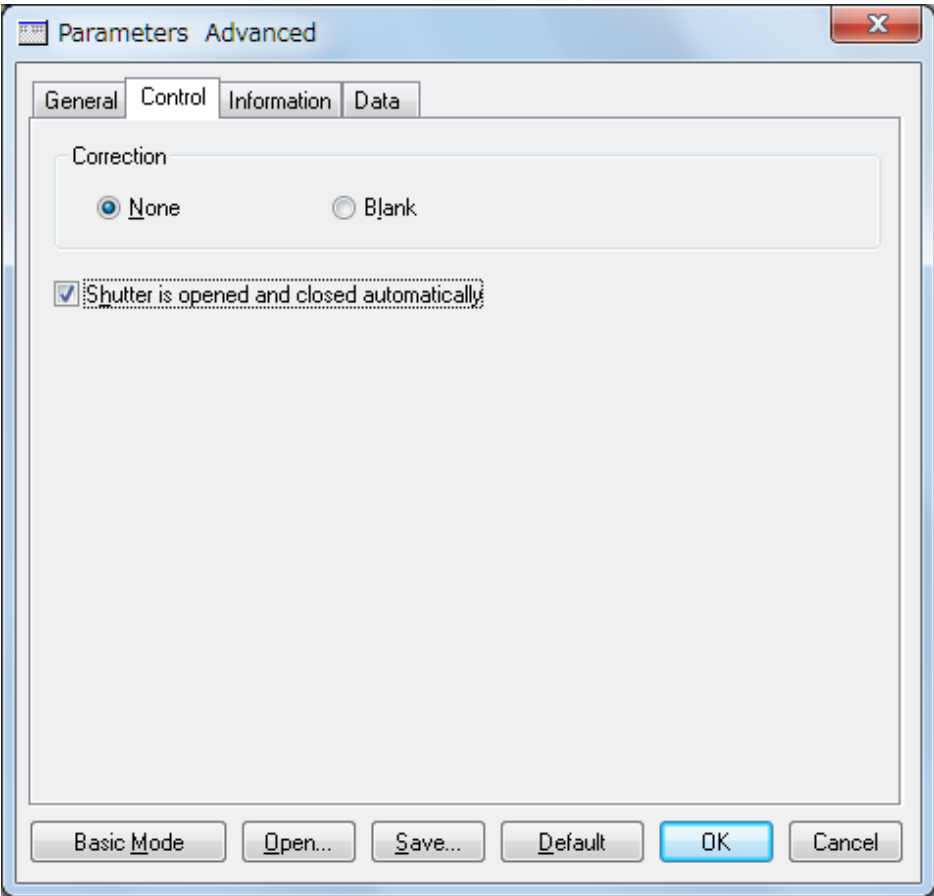
Figure 5.4 [Control] tab in [Parameters] dialog box

Correction   [None]
[Shutter is opened and closed automatically]   Selected

(5) Click the [Information] tab. Type information in the [Sample name], [Operator], [Division], [Comment], [Concentration] and [Solvent] text boxes as desired. The information entered here is saved as comment information together with the time-course data when the data are saved.
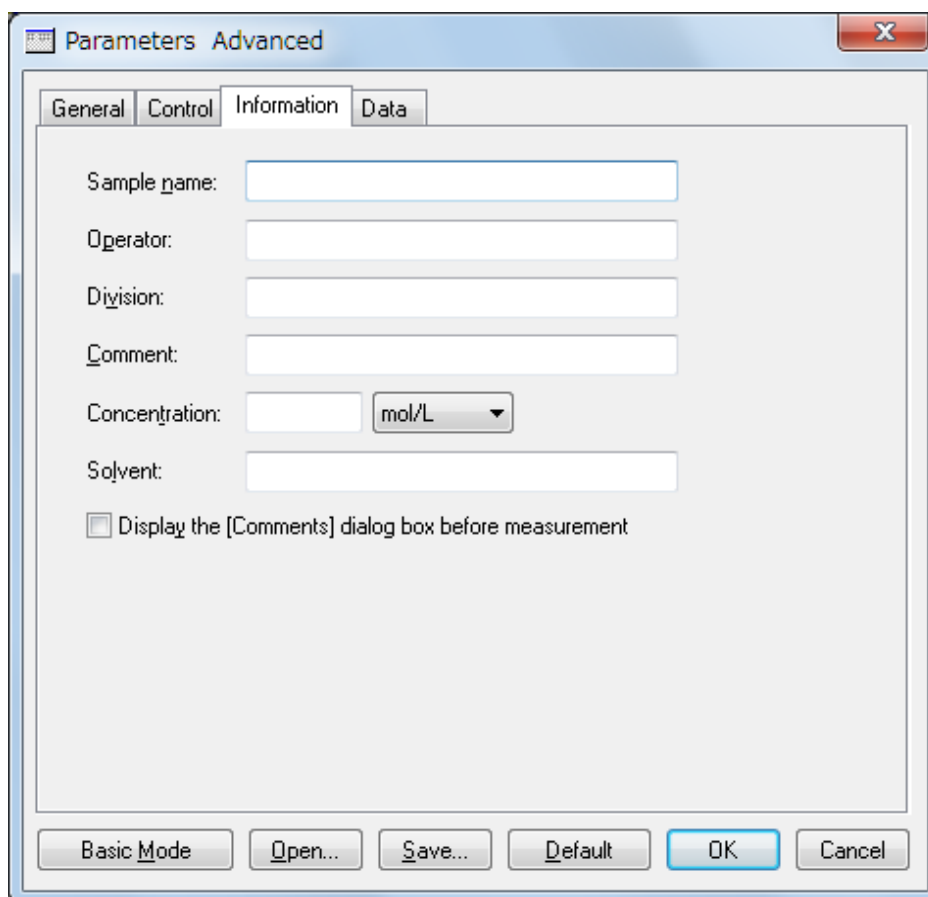
Figure 5.5 [Information] tab in [Parameters] dialog box

[Sample name]	Enter as desired (maximum 63 characters).
[Operator]	Enter an operator name (maximum 63 characters).
[Division]	Enter a division name for the operator (maximum 127 characters).
[Comment]	Enter as desired (maximum 127 characters).
[Concentration]	Enter as desired.
[Solvent]	Enter as desired (maximum 127 characters).
[Display the [Comments] dialog box before measurement]	Deselected

Note: In the CFR version, the [Operator] and [Division] text boxes cannot be changed by the user.

63

(6)   Click the [Data] tab. Specify the [Save data], [Send data], and [Print] options for the
       measured data. In this example, select the [To Spectra Analysis] check box.
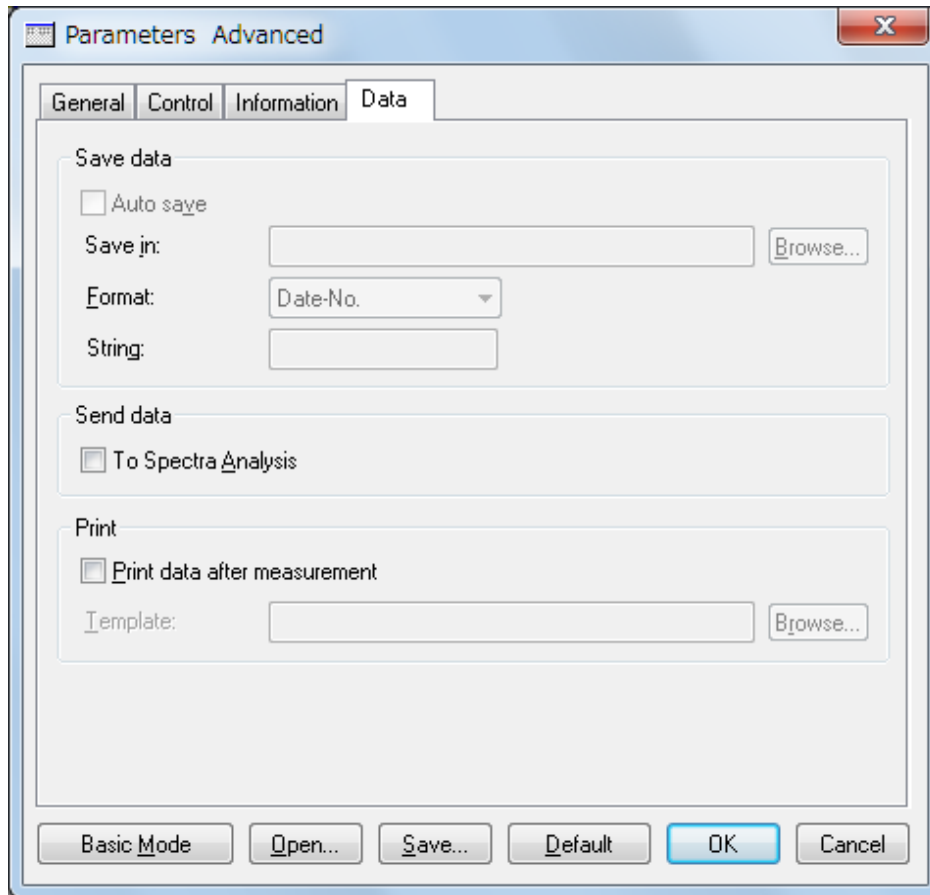
Figure 5.6 [Data] tab in [Parameters] dialog box

[Auto save]	Deselected
[To Spectra Analysis]	Selected
[Print data after measurement]	Deselected

(7)　In the CFR version, always save changes to the parameters. Click the <Save...> button to display the dialog box in Fig. 5.7.
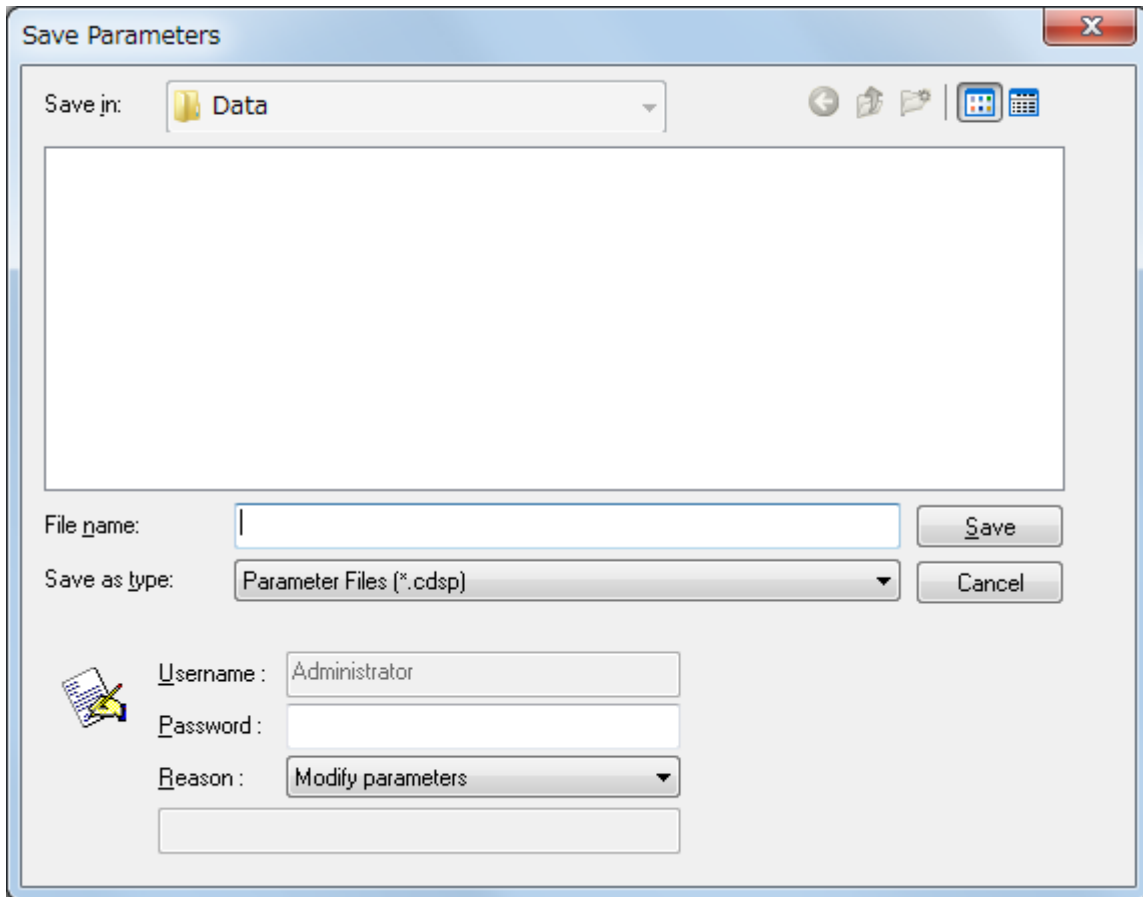
Figure 5.7 [Save Parameters] dialog box

(8)　After entering the file name, type a password and then click the <Save> button.

Note:　When the parameters have not been saved, the following message is displayed.
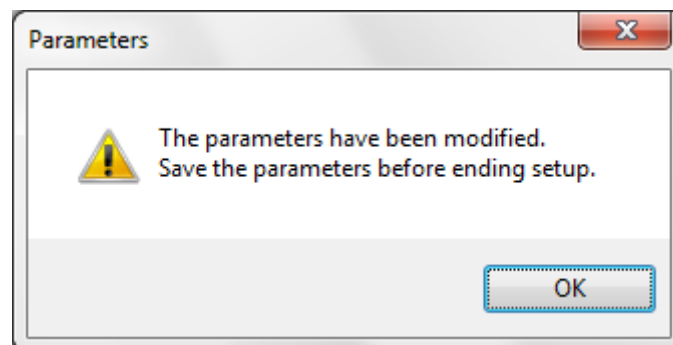
Figure 5.8 Message when the parameters have not been saved

5.4 Measuring the Sample

(1) Inserting the sample

Fill the cell with the sample, place the cell in the cell holder, and then close the lid of the sample compartment.

(2) Measuring the sample

Select [Sample Measurement] from the [Measure] menu (or click the ![button]button) to measure the time-course data for the sample. The progress of the measurement is displayed in the window (see Fig. 5.9).
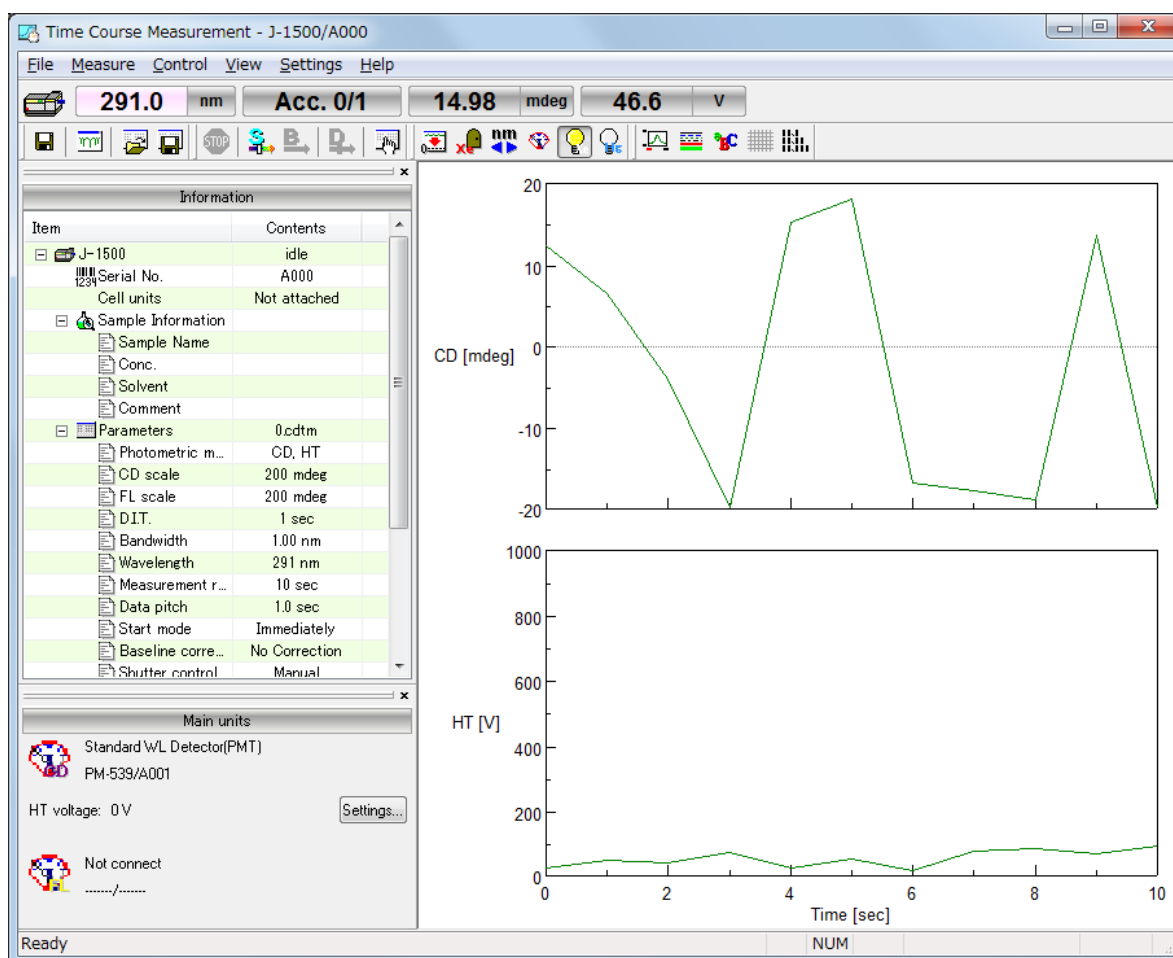
Figure 5.9 [Spectra Measurement] window

After measurement, the [Spectra Analysis] program starts and the measured data is displayed in the window. This window is called a "View". Figure 5.10 shows an example of a measured spectrum that has not yet been saved (Title bar: View <Memory-1>).

Note 1: When the [Spectra Analysis] program is already running, it is not automatically displayed as the active window after measurement. Click [Spectra Analysis] on the Windows task bar to display the program as the active window.
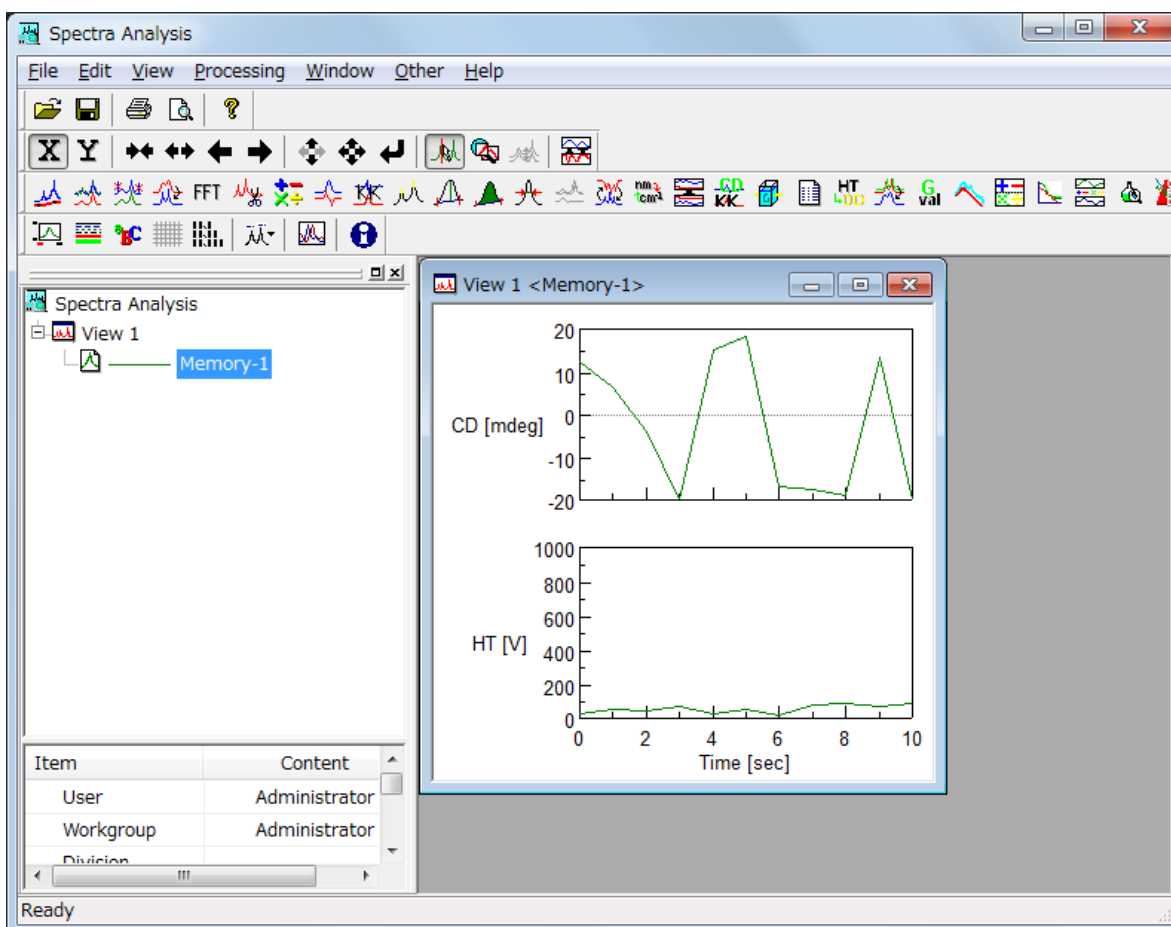
Figure 5.10 Spectrum View (fluorescence spectra)

5.5 Saving Time-Course Data

This section describes the procedure for saving time-course data using the [Spectra Analysis] program.

> *Note:* *Data can also be saved by selecting [Save Data...] from the [File] menu (or by clicking the* 🖫 *button) in the [Spectra Measurement] program.*

(1) Select [Save As...] from the [File] menu in the [Spectra Analysis] program to display the dialog box in Fig. 5.11.
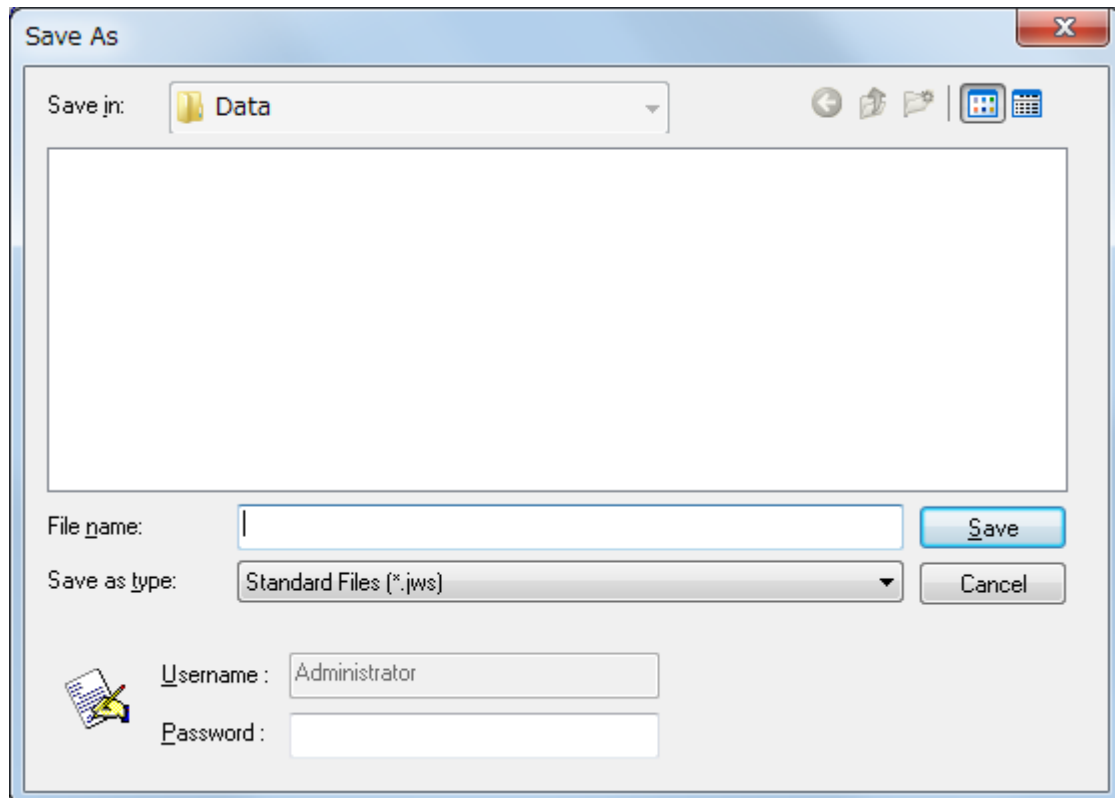
Figure 5.11 [Save Data] dialog box

(2) From the [Save in] drop-down list, select the folder in which to save the data.

> *Note:* *In the CFR version, the [Save in] drop-down list cannot be used to select a folder in which to save the data. Folder selection is limited by Administrators using the [Administrative Tools] program. Refer to the [Administrative Tools] program manual for details.*

(3) Type the file name in the [File name] text box. In this example, type "d-10-ACS" as the file name.

(4) After entering the file name, type a password and then click the <Save> button.

(5) The file name is appended with the extension ".jws" ("d-10-ACS.jws"), which is the standard file type.

(6) After saving the data, the title bar of the View changes to "View (d-10-ACS.jws)".

> *Note: Refer to the [Spectra Analysis] program manual for details about saving spectra.*

5.6   Printing Results

Print the measured spectra using a connected printer as follows.

(1)   Select [Print Setup...] from the [File] menu to display the dialog box in Fig. 5.12. The content of this dialog box varies depending on the connected printer. Configure the printer settings if necessary.
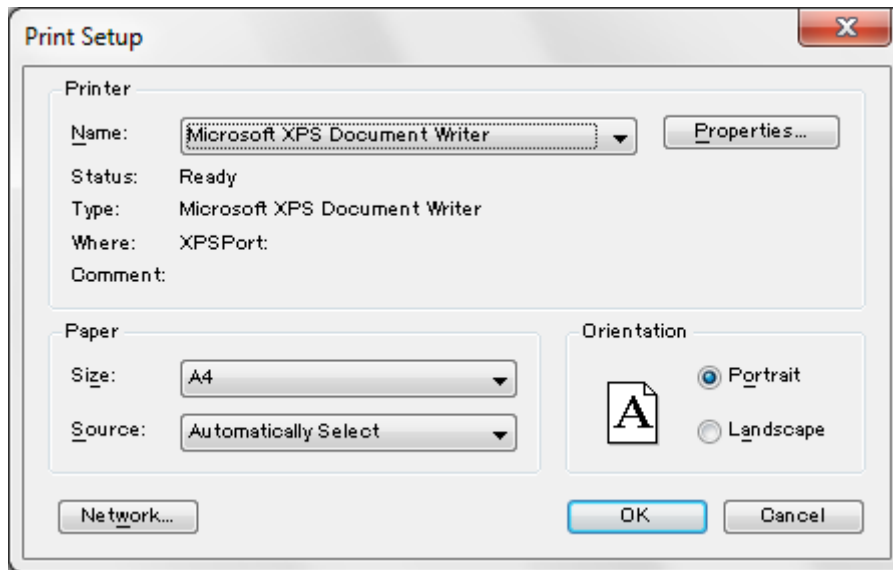
Figure 5.12 Example of [Print Setup] dialog box

(2)   Select [Print...] from the [File] menu to print the data.

> *Note 1: Refer to the [Spectra Analysis] program manual for details about printing a spectrum.*
> *Note 2: In the CFR version, "Unsigned" will be watermarked on the printed page when no creation signature is assigned to the measurement data.*

5.7 Exiting the Program

(1) Exiting the [Spectra Analysis] program

Select [Exit] from the [File] menu. The [Spectra Analysis] window closes, leaving the [Spectra Measurement] window displayed.

Note: *When there are unsaved data in the window, a warning message is displayed. Perform the action recommended by the message. A message is displayed for each unsaved set of data.*
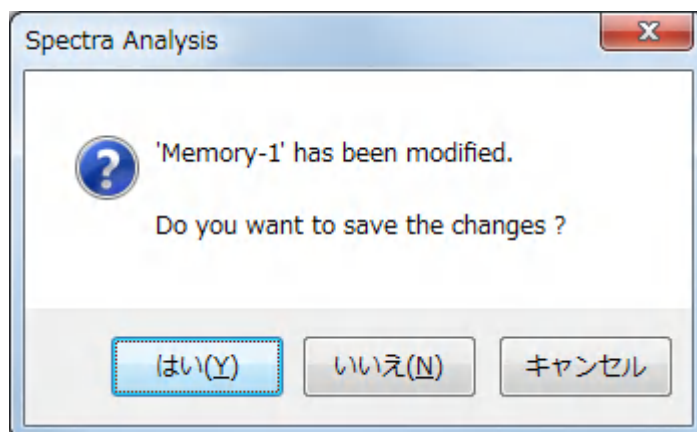
Figure 5.13 Message when data have not been saved

---

(2) Exiting the [Time Course Measurement] program

Select [Exit] from the [File] menu to close [Time Course Measurement], leaving the [Spectra Manager] window displayed.

(3) Exiting the [Spectra Manager] program

Select [Exit] from the [Program] menu.

(4) Exiting *Windows*

Exit *Windows* in accordance with standard *Windows* operation procedures.

(5) Turning off the PC and CD spectrometer

First, turn off the PC and monitor. Do not forget to turn off the monitor.

Ensure that the sample compartment is empty, and then turn off the CD spectrometer.

6. [Spectra Measurement] Program Reference

This chapter describes common toolbar and menu commands for the [Spectra measurement], [Time Course Measurement] and [Data Monitor] programs. Refer to Chapters 7 to 9 or the [Help] menu for details about specific parameters for each measurement program.

Note 1: Refer to Table 6.1 for information about the availability of toolbar and menu commands in the three programs.
Note 2: All toolbar and menu commands are not necessarily available for every program.

The [Spectra Measurement] program reference describes the features of the [Spectra Measurement] program for measuring a sample spectrum.

6.1 Overview of Measurement Programs

Starting the measurement program displays the window in Fig. 6.1.

Monitor bar
Displays the current wavelength, photometric value, number of cycles or number of accumulations.

Toolbar
Measurement , parameter settings can be set and other common functions can be performed using the buttons on this toolbar (see Table 6.1). These tool buttons can be customized in the [Settings] menu.

Information bar
Displays the current measurement parameters.

Data display field
Displays the data being measured. The display format can be specified using the [View] menu.

Main unit bar
Displays the current detector and alarm information for J-1000. Detectors can be controlled from this bar.

Accessory bar
Displays information about attached accessories. Some accessories can be controlled from this bar.

Figure 6.1 Measurement program window ([Spectra Measurement])

Table 6.1 Toolbar buttons and names

Button	Name	Reference Section	Spectra Measurement	Time Course Measurement	Data Monitor
	[Save]	6.2.1 [Save Data...]	✔	✔	
	[Send to Analysis]	6.2.2 [Send to Analysis]	✔	✔	
	[Open Parameters]	6.2.3 [Open Parameters...]	✔	✔	
	[Save Parameters]	6.2.4 [Save Parameters...]	✔	✔	
	[Cancel]	6.3.1 [Cancel]	✔	✔	
	[Sample Measurement]	6.3.2 [Sample Measurement]	✔	✔	
	[Blank/Baseline Measurement]	6.3.3 [Baseline Measurement] 6.3.4 [Blank Measurement]	✔	✔	
	[DC Dark Measurement]	6.3.5 [DC Dark Measurement]	✔	✔	
	[Parameters]	6.3.6 [Parameters...]	✔	✔	✔
	[Zero Clear]	6.4.1 [Zero Clear]	✔	✔	✔
	[Shutter]	6.4.2 [Shutter...]	✔	✔	✔
	[Move Wavelength]	6.4.3 [Move Wavelength...]	✔	✔	✔
	[Detector]	6.4.4 [Detector...]	✔	✔	✔
	[Light Source]	6.4.5 [Light Source...]	✔	✔	✔
		Note: Turns the xenon lamp on or off.			
	[Hg Lamp]	6.4.5 [Light Source...]	✔	✔	✔
		Note: Indicates the status of the mercury lamp. The lamp cannot be turned on or off by clicking the button.			
	[Scales]	6.5.1 [Scales...]	✔	✔	
	[Patterns]	6.5.2 [Patterns...]	✔	✔	✔
	[Fonts]	6.5.3 [Fonts ...]	✔	✔	✔
	[Gridlines]	6.5.4 [Gridlines...]	✔	✔	✔
	[Styles]	6.5.5 [Styles...]	✔	✔	✔
	[Digital]	6.5.12 [View Mode]			✔
	[Graph 表示]	6.5.12 [View Mode]			✔

Window

Title bar	Displays the program name.
Menu bar	Displays the menus for operation.
Monitor bar	Displays from left to right the current wavelength, number of cycles or number of accumulations and photometric value.
Toolbar	Displays available tool buttons. These tool buttons can be customized in the [Settings] menu.
Information bar	Displays the current measurement parameters.
Main unit bar	Displays current detector information and alarm information for the J-1000 CD spectrometer.
Accessory bar	Displays information about the attached accessory.
Spectrum display field	Displays the spectrum or time-course data being measured.
Status bar	Displays the current state of the instrument and an explanation of the selected menu.

Menu

[File] menu		Spectra Measurement	Time Course Measurement	Data Monitor
[Save Data...]	Saves the spectrum with a new file name.	✔	✔	
[Send to Analysis]	Transfers the measured data to the [Spectra Analysis] program.	✔	✔	
[Open Parameters...]	Selects a parameter file and opens those parameters.	✔	✔	
[Save Parameters...]	Saves the currently specified measurement parameters with the entered file name.	✔	✔	
[Open Baseline...]	Selects a baseline file and opens that baseline spectrum. *Note: In the CFR version, this function is not available.*	✔		
[Save Baseline...]	Saves the currently measured baseline spectrum with the entered file name. *Note: In the CFR version, this function is not available.*	✔		
[Exit]	Exits the measurement program and returns to [Spectra Manager].	✔	✔	✔

	Note: This command is in the [Measure] menu in the [Data Monitor] program.			
[Measure] menu				
[Cancel]	Cancels the measurement.	✔	✔	
[Sample Measurement]	Measures the spectrum or time-course data for the sample.	✔	✔	
[Baseline Measurement]	Measures the baseline spectrum for baseline correction.	✔		
[Blank Measurement]	Measures the blank for blank correction.		✔	
[DC Dark Measurement]	Measures the dark spectrum for dark correction.	✔	✔	
[Parameters...]	Specifies parameters and saves or opens the measurement parameters.	✔	✔	✔
[Control] menu				
[Zero Clear]	Sets the photometric value of ORD-M or fluorescence intensity at the current wavelength to zero.	✔	✔	✔
[Shutter...]	Opens/closes the shutter.	✔	✔	✔
[Move Wavelength...]	Moves the CD spectrometer wavelength to the desired wavelength.	✔	✔	✔
[Detector...]	Sets the detector sensitivity.	✔	✔	✔
[Light Source]	Turns on or off the xenon lamp.	✔	✔	✔
[Nitrogen Flowrate...]	Specifies the flow rate of nitrogen gas. This command is only displayed when [Automatic (PC control)] is selected for the nitrogen flow meter.	✔	✔	✔
[Select Detector...]	Selects a detector.	✔	✔	✔
[Select Accessory...]	Selects an accessory.	✔	✔	✔
[View] menu				
[Scales...]	Specifies the display scale for the spectrum or time-course data.	✔	✔	
[Patterns...]	Selects the display color and line style for the spectrum or time-course data.	✔	✔	
[Fonts...]	Specifies the display font for the spectrum or time-course data.	✔	✔	

[Gridlines...]	Shows/hides the gridlines for the spectrum or time-course data.	✔	✔	
[Styles...]	Specifies the display style for the spectrum or time-course data.	✔	✔	
[Overlay]	Overlays spectra or time-course data when cycle measurement is selected.	✔	✔	
[Select Graph...]	Selects the graph to be displayed on the CD spectrum display field.	✔	✔	
[Information Bar]	Shows/hides the information bar.	✔	✔	✔
[Accessory Bar]	Shows/hides the accessory bar.	✔	✔	✔
[Toolbars]	Shows/hides toolbars.	✔	✔	✔
[Status Bar]	Shows/hides the status bar.	✔	✔	✔
[View Mode]	Displays the photometric value in digital or graph mode.			✔
[Graph View]	Selects the graph to be displayed when graph mode is selected for the photometric value display.			✔
[Settings] menu				
[Default Parameters...]	Specifies measurement parameters for running the [Spectra Measurement] and [Time Course Measurement] programs based on the currently recognized accessory. *Note: In the CFR version, this function is not available.*	✔	✔	
[Customize Toolbar...]	Customizes and shows/hides toolbars.	✔	✔	✔
[Monitor Bar...]	Customizes the style of the monitor bar.	✔	✔	✔
[Help] menu				
[About...]	Displays version information for the program.	✔	✔	✔

6.2 [File] Menu

Saves or opens a measured data or parameter file.

6.2.1 [Save Data...]

Saves the measured data with a new file name.

> *Note:* *This operation can also be performed by clicking the tool button* 🖫 *[Save].*
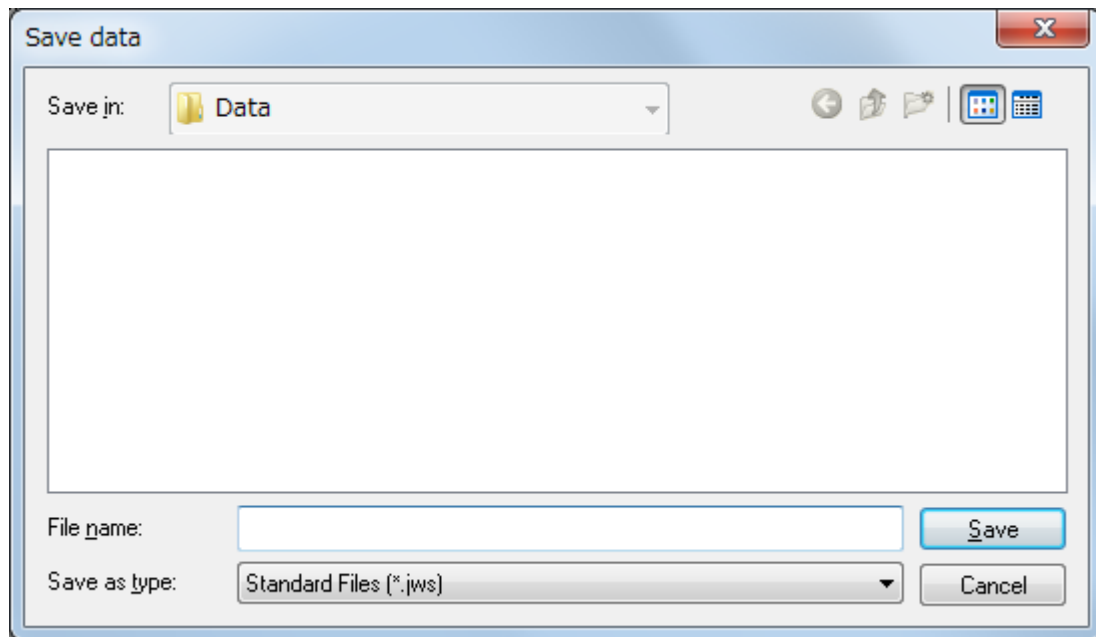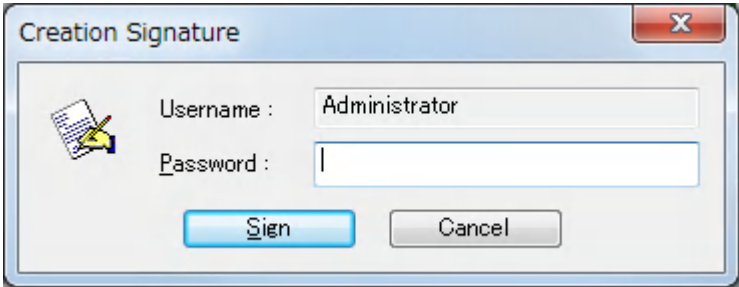
Figure 6.2 [Save data] dialog box

[Save in] list	Selects a drive or folder to browse using the drop-down list. Files saved in the currently opened folder are displayed in the file name list.
File name list	Lists the files in the currently opened folder. Use as a reference when naming a file.
[File name]	Enters a file name for saving the measured data. An extension may be omitted.
[Save as type]	Selects the files (type of extension) to display in the file name list. Files other than Standard Files (*.jws) cannot be selected.

<u>S</u>ave>	Saves the measured data and closes the dialog box. In the CFR version, an electronic signature is required for saving data. Figure 6.3 [Creation Signature] dialog box
<Cancel>	Closes the dialog box without saving the measured data.

Note: *In the CFR version, the [Save <u>in</u>] drop-down list cannot be used to select a folder. However, a subfolder within the prespecified folder can be selected.*

6.2.2 [Send to Analysis]

Transfers the measured data to the [Spectra Analysis] program. Selecting the [To Spectra Analysis] check box in the [Data] tab of the [Parameters] dialog box from the [Measure] menu automatically transfers the measured spectrum to the [Spectra Analysis] program after measurement.

When a value of 2 or more is specified for the number of cycles in the [Parameters] dialog box, the dialog box in Fig. 6.4 is displayed.
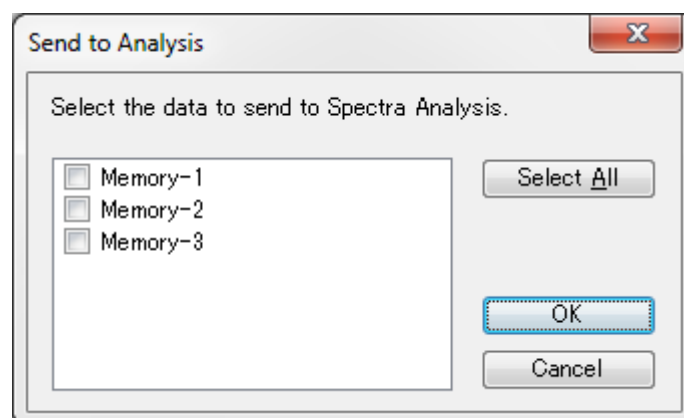
Figure 6.4 [Send to Analysis] dialog box

Select the check boxes for the data to send to the [Spectra Analysis] program (or click the <Select <u>A</u>ll> button to send all data), and then click the <OK> button.

Note: *This operation can also be performed by clicking the tool button [Send to Analysis].*

6.2.3 [Open Parameters...]

Selects a parameter file and opens those parameters.

Note 1: This operation can also be performed by clicking the tool button 🖿 *[Open Parameters].*

Note 2: The dialog box in Fig. 6.5 displays only the parameter files for the currently attached accessory.
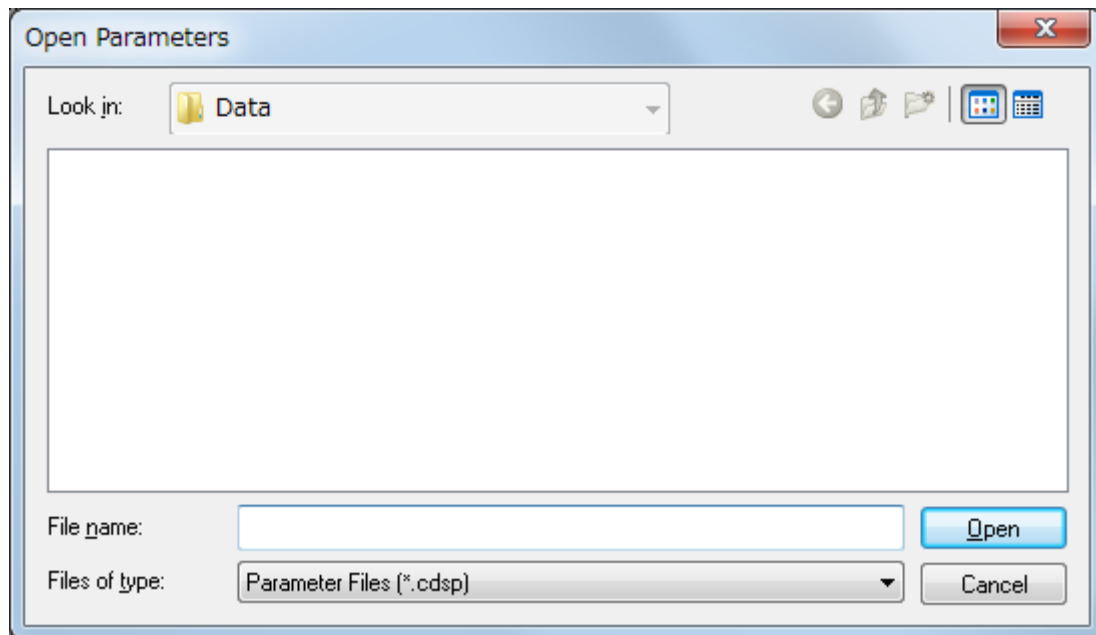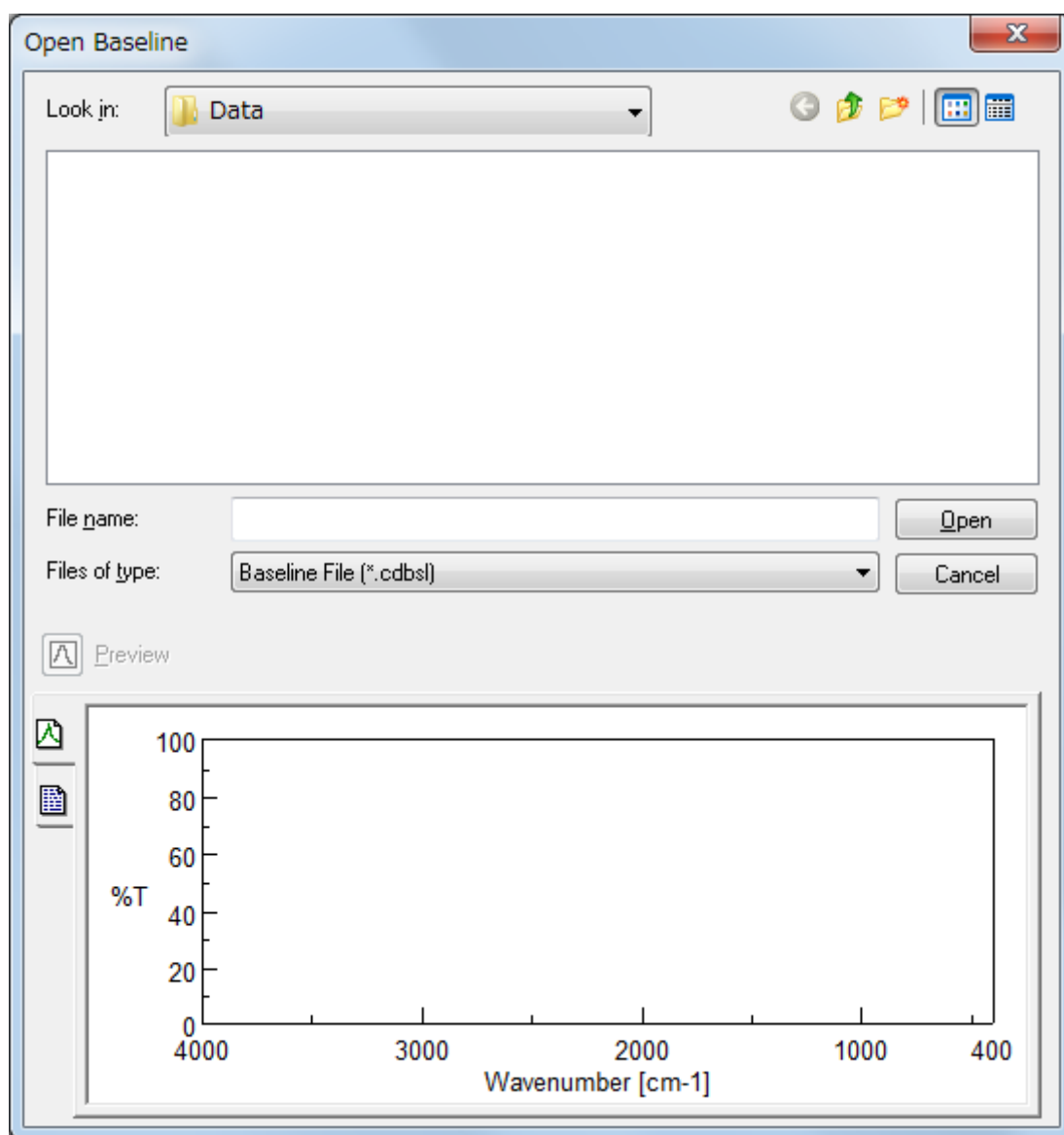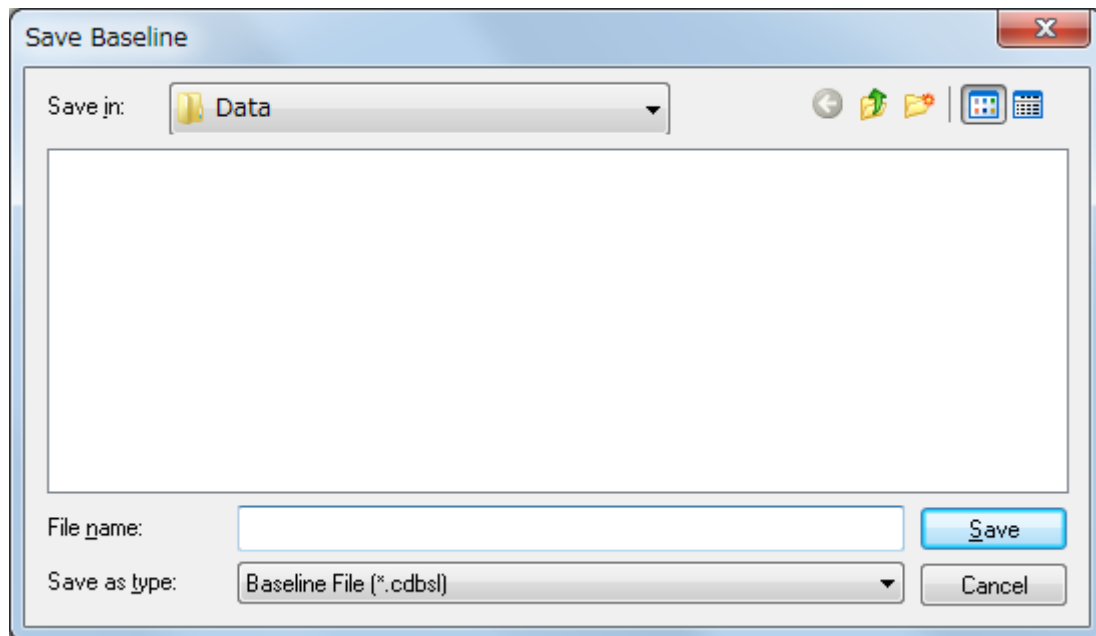

Figure 6.5 [Open Parameters] dialog box

[Look in] list	Selects a drive and folder to browse using the drop-down list. Files saved in the currently opened folder are displayed in the file name list.
File name list	Lists the files in the currently opened folder. Selects the file name of the parameters to open.
[File name]	Enters the file name of the parameters to open. An extension may be omitted since the appropriate extension for the measurement program is automatically appended.
[Files of type]	Selects the files (type of extension) to display in the file name list. Files other than Parameter Files (having the appropriate extension for the measurement program) cannot be selected.
<Open>	Opens a parameter file and closes the dialog box.
<Cancel>	Closes the dialog box without opening a parameter file.

Note: In the CFR version, the [Look in] drop-down list cannot be used to select a folder. However, a subfolder within the prespecified folder can be selected.

6.2.4 [Save Parameters...]

Saves the currently specified measurement parameters with the entered file name.

> *Note: This operation can also be performed by clicking the tool button* 🖫 *[Save Parameters].*
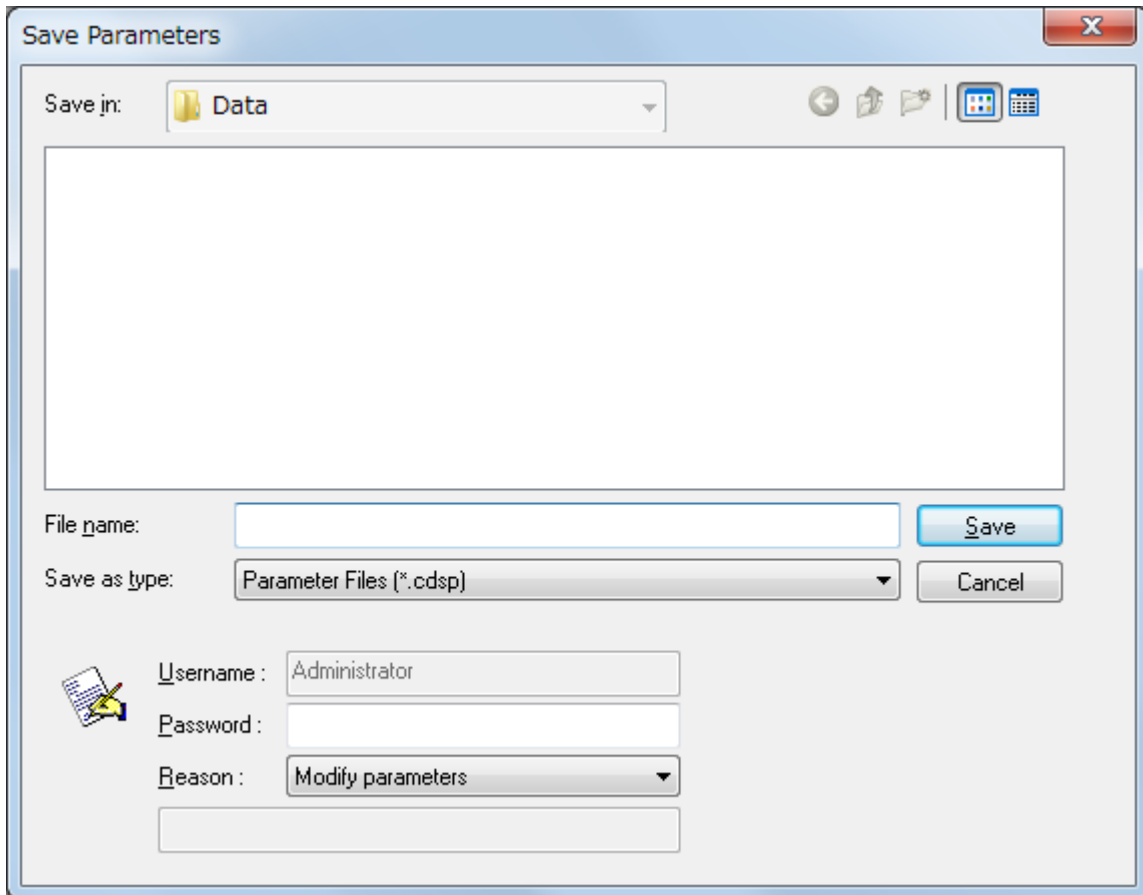
Figure 6.6 [Save Parameters] dialog box

[Save in] list	Selects a drive or folder to browse using the drop-down list. Files saved in the currently opened folder are displayed in the file name list.
File name list	Lists the files in the currently opened folder. Use as a reference when naming a file.
[File name]	Enters a file name for saving parameters. An extension may be omitted since the appropriate extension for the measurement program is automatically appended.
[Save as type]	Selects the files (type of extension) to display in the file name list. Files other than Parameter Files (having the appropriate extension for the measurement program) cannot be selected.
[Username]	Displays the name of the logged-on user. This cannot be edited.
[Password]	In the CFR version, an electronic signature is required for saving parameters. Type a password in the text box.

[Reason]	Selects a reason for saving the parameters. This cannot be selected when new parameters are created. After modifying parameters, select [Other] from the drop-down list to activate the text box for typing the reason.
<Save>	Saves the parameter file and closes the dialog box.
<Cancel>	Closes the dialog box without saving the parameter file.

Note: In the CFR version, the [Save in] drop-down list cannot be used to select a folder. However, a subfolder within the prespecified folder can be selected.

6.2.5   [Open Baseline...]

Selects a baseline file and opens that baseline. When a baseline file is opened, the sample spectrum is corrected by using the opened baseline spectrum.

Note 1: In the CFR version, this function is not available.
Note 2: The following dialog box displays only the baseline files for the currently attached accessory.
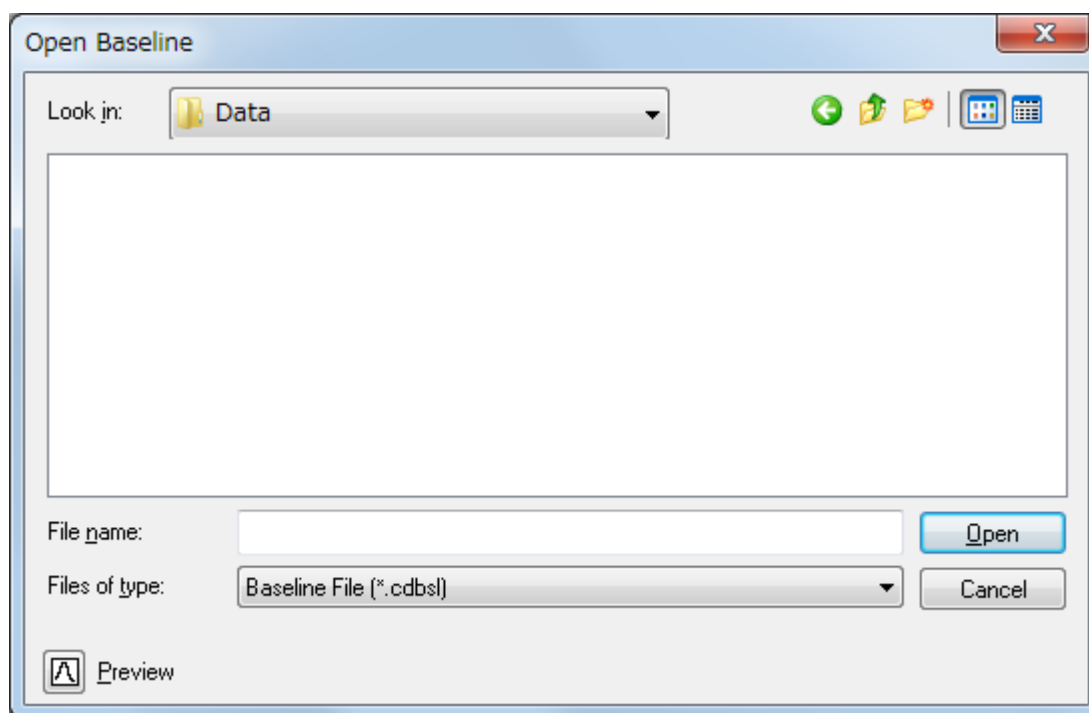
Figure 6.7 [Open Baseline] dialog box

Click the ![] <Preview> button in Fig. 6.6 to display the spectrum of the selected baseline file (see Fig. 6.7).

Figure 6.8 [Open Baseline] dialog box

[Look in] list	Selects a drive or folder to browse using the drop-down list. Files saved in the currently opened folder are displayed in the file name list.
File name list	Lists the files in the currently opened folder. Selects the file name of the baseline spectrum to open.
[File name]	Enters the file name of the baseline spectrum to open. An extension may be omitted since the extension ".cdbsl" is automatically appended.
[Files of type]	Selects the files (type of extension) to display in the file name list. Files other than Baseline Files (*.cdbsl) cannot be selected.
<Preview>	Displays the baseline spectrum and information about the selected file (see Fig. 6.9).
<Open>	Opens the baseline file and closes the dialog box.
<Cancel>	Closes the dialog box without opening a baseline file.

81

6.2.6   [Save Baseline...]

Saves the currently measured baseline spectrum with the entered file name.

Note: In the CFR version, this function is not available.

Figure 6.9 [Save Baseline] dialog box

[Save in] list	Selects a drive or folder to browse using the drop-down list. Files saved in the currently opened folder are displayed in the file name list.
File name list	Lists the files in the currently opened folder. Use as a reference when naming a file.
[File name]	Enters a file name for saving the baseline spectrum. An extension may be omitted since the extension ".cdbsl" is automatically appended.
[Save as type]	Selects the files (type of extension) to display in the file name list. Files other than Baseline Files (*.cdbsl) cannot be selected.
<Save>	Saves the measured blank spectrum and closes the dialog box.
<Cancel>	Closes the dialog box without saving the measured baseline spectrum.

6.2.7   [Exit]

Exits the [Spectra Measurement] program.

6.3   [Measure] Menu

Starts or cancels the measurement, and specifies the measurement parameters.

6.3.1   [Cancel]

Cancels the measurement. A dialog box to confirm whether to keep the measurement data is displayed.

Note: This operation can also be performed by clicking the tool button 🛑 *[Cancel].*
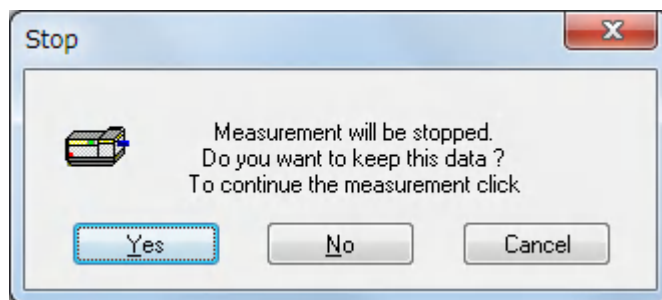
Figure 6.10 [Cancel] dialog box

<u>Yes</u>	Keeps the measured spectrum.
<u>No</u>	Discards the measured spectrum.
<Cancel>	Continues the measurement.

6.3.2   [Sample Measurement]

Measures the CD spectrum of the sample. Selecting the [To Spectra <u>A</u>nalysis] check box in the [Data] tab of the [Parameters] dialog box from the [<u>M</u>easure] menu automatically transfers the measured data to the [Spectra Analysis] program after measurement. The measured data is displayed in a new View.

Note: This operation can also be performed by clicking the tool button 🔷 *[Sample]*
or pressing the measurement start button of the CD spectrometer.

6.3.3   [Baseline Measurement]

Measures the baseline spectrum for baseline correction. Available if [Baseline] is selected in the [Control] tab of the [Parameters] dialog box.

Baseline correction removes the effects of solvents and additional agents other than the target sample. The true sample spectrum is obtained by subtracting the baseline spectrum from the measured spectrum.

Confirm that the sample for baseline measurement has been inserted, and then click the <Measure> button.

Note: This operation can also be performed by clicking the tool button *[Baseline Measurement]. When the dialog box in Fig. 6.11 is displayed, the baseline measurement can also be started by pressing the <Measure> button.*
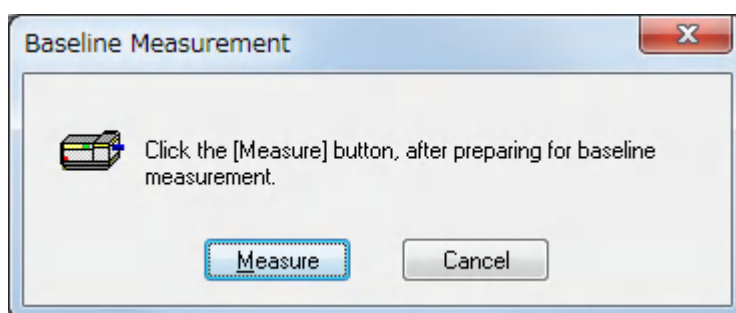
Figure 6.11 [Baseline Measurement] dialog box

<Measure>	Measures the baseline spectrum for baseline correction.
<Cancel>	Closes the [Baseline Measurement] dialog box without measuring the baseline

6.3.4   [Blank Measurement]

Measures the blank data for blank correction. Available if [Blank] is selected in the [Control] tab of the [Parameters] dialog box.

Blank correction removes the effects of solvents and additional agents other than the target sample. The sample signal is obtained by subtracting the blank data from the data obtained during measurement of the sample.

Confirm that the blank has been inserted, and then click the <Measure> button.

Note: This operation can also be performed by clicking the tool button *[Blank Measurement]. When the dialog box in Fig. 6.12 is displayed, the blank measurement can also be started by pressing the <Measure> button.*
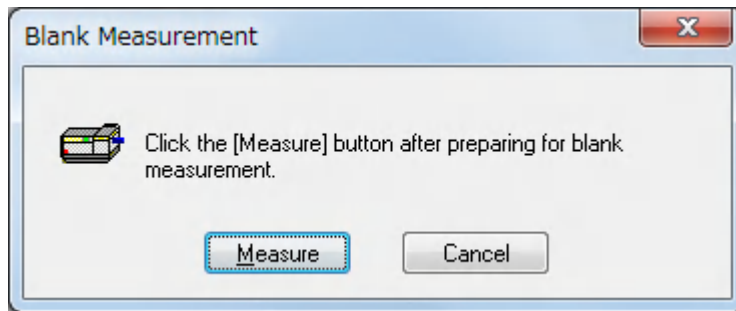
Figure 6.12 [Blank Measurement] dialog box

<u>M</u>easure>	Measures the blank spectrum for blank correction.
<Cancel>	Closes the [Blank Measurement] dialog box without measuring the blank.

6.3.5   [DC Dark Measurement]

Measures the photometric value for dark correction. Available if the InGaAs photoconductive detector is used.

> *Note: This operation can also be performed by clicking the tool button* *[DC Dark Measurement].*
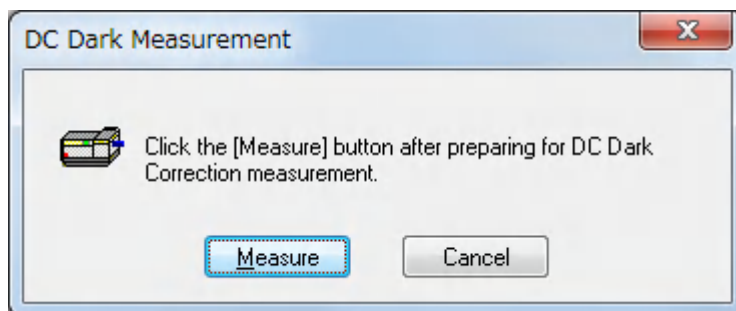
Figure 6.13 [DC Dark Measurement] dialog box

<u>M</u>easure>	Measures the photometric value for dark correction.
<Cancel>	Closes the [DC Dark Measurement] dialog box without measuring the dark current.

6.3.6   [Parameters...]

Specifies the measurement parameters. Refer to each measurement program reference.

6.4   [Control] menu
6.4.1   [Zero Clear]

Sets the photometric value of the ORD-M or fluorescence intensity to zero. Available if an ORD-M or fluorescence detector is connected.

Note: This operation can also be performed by clicking the tool button *[Zero Clear].*

6.4.2   [Shutter]

Opens/closes the shutter.

Note: This operation can also be performed by clicking the tool button *[Shutter].*

6.4.3   [Move Wavelength...]

Moves the wavelength of the CD spectrometer to the desired wavelength. When the measurement is started, data acquisition begins once the wavelength returns to the value specified in [Parameters].
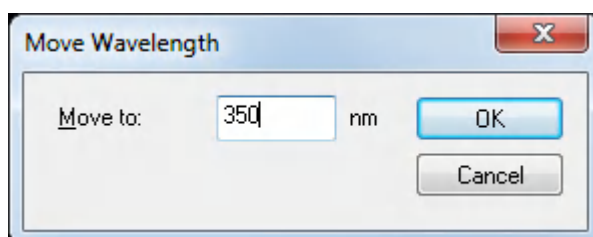
Figure 6.14 [Move Wavelength] dialog box

[Move to]	Specifies the wavelength. J-1100: 180 to 600 nm J-1500: 163 to 1600 nm
<OK>	Moves the wavelength of the CD spectrometer to the specified wavelength and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Move Wavelength] settings.

Note: This operation can also be performed by clicking the tool button *[Move Wavelength].*

6.4.4 [Detector ...]

Specifies the sensitivity for monitoring the photometric value.
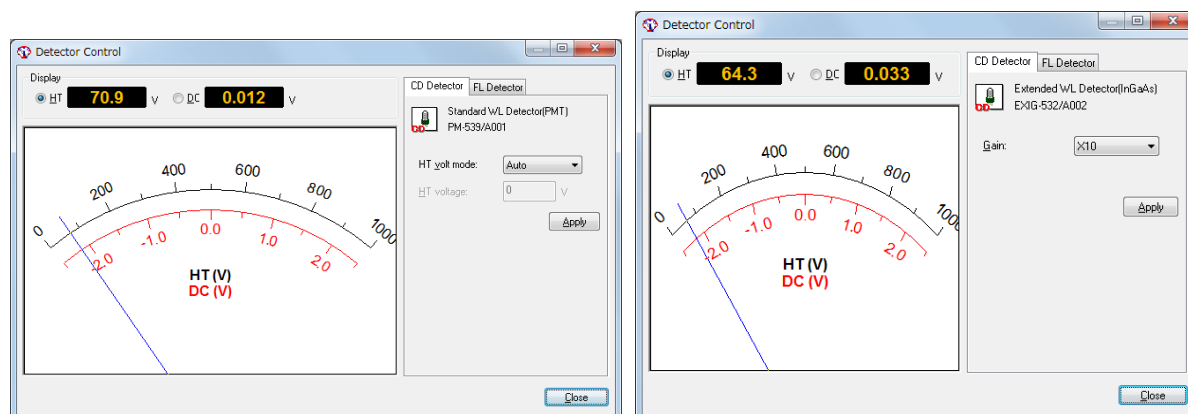
Figure 6.15 [Sensitivity] dialog box (left: PMT) (right: InGaAS)

Display	
[HT]	Displays the HT voltage for the detector.
[DC]	Displays the DC voltage for the detector.
[HT volt mode]	
[Auto]	Automatically sets the applied voltage for the photomultiplier tube.
[Manual]	Manually sets the applied voltage for the photomultiplier tube.
[Off]	Sets the detector voltage off.
[HT voltage]	Specifies the photomultiplier tube voltage when [Manual] is selected for [Sensitivity]. Setting range: 0 to 999 V
[Gain]	Selects the voltage gain for the InGaAs detector. Options: ×1, ×10, ×100
<Apply>	Sets the sensitivity of the CD spectrometer to the specified sensitivity.
<Cancel>	Closes the dialog box without applying any changes to the [Sensitivity] settings.

Note: This operation can also be performed by clicking the tool button ![tool button]

6.4.5   [Light Source...]

Turn on/off the light source.
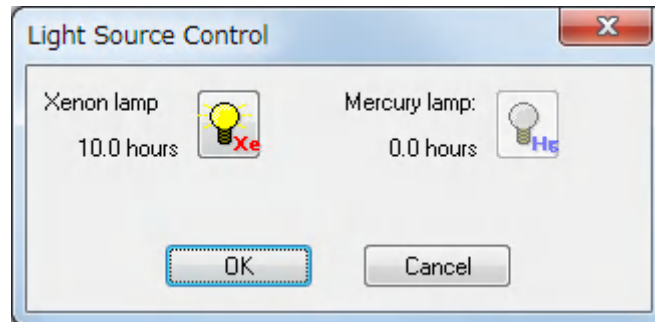
Figure 6.16 [Light Source Control] dialog box

Note 1: This operation can also be performed by clicking the tool button *[Light Source].*

Note 2: *indicates the status of the mercury lamp. The lamp cannot be turned on or off by clicking the button.*

6.4.6   [Nitrogen Flowrate...]

Controls the nitrogen gas flow rate. Available if a PC-controlled nitrogen-gas auto flow meter is selected.
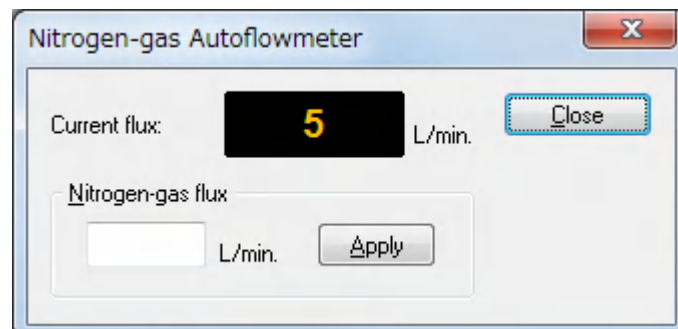
Figure 6.17 [Nitrogen Gas Auto Flow Meter] dialog box

Note: This command is displayed when the PC-controlled nitrogen gas auto flow meter is selected in [Administrative Tools].

6.4.7 [Select Detector...]

Recognizes a detector manually. Select the detector to use and click the <OK> button. A dialog box stating "Connecting to the detector..." is displayed.
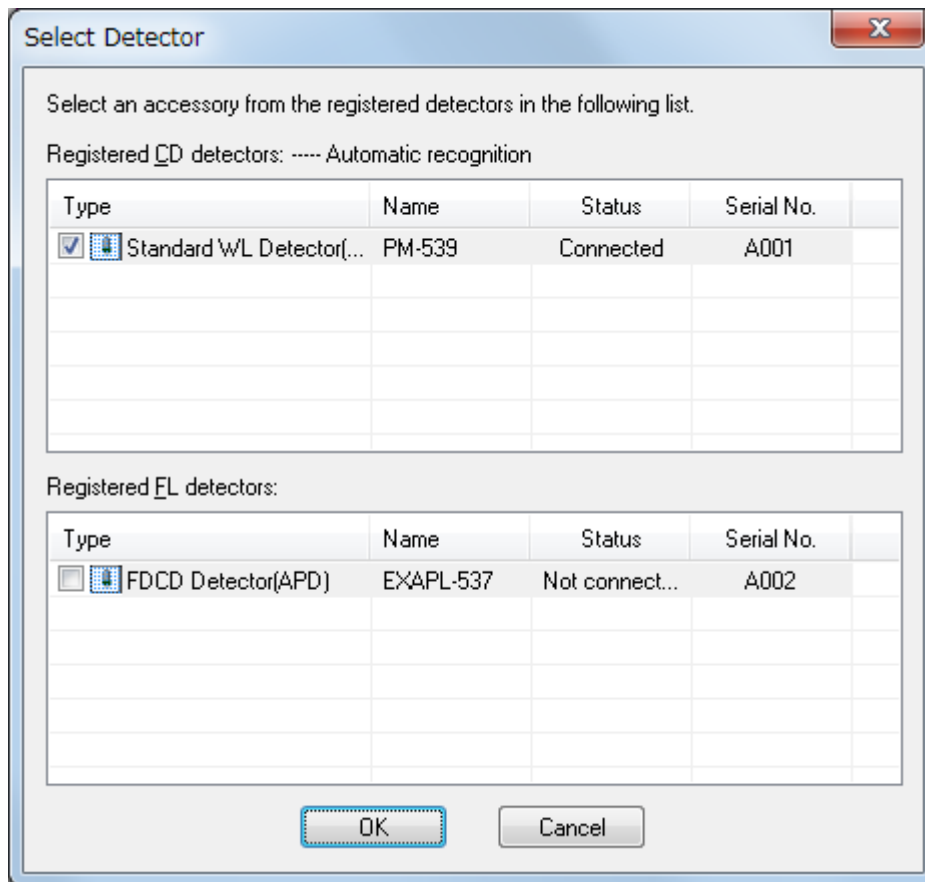
Figure 6.18 [Select Detector] dialog box

6.4.8   [Select Accessory...]

Selects an accessory (cell unit, external accessories and measurement units) to be used. After clicking the <OK> button, the message "The accessory was attached successfully." is displayed.
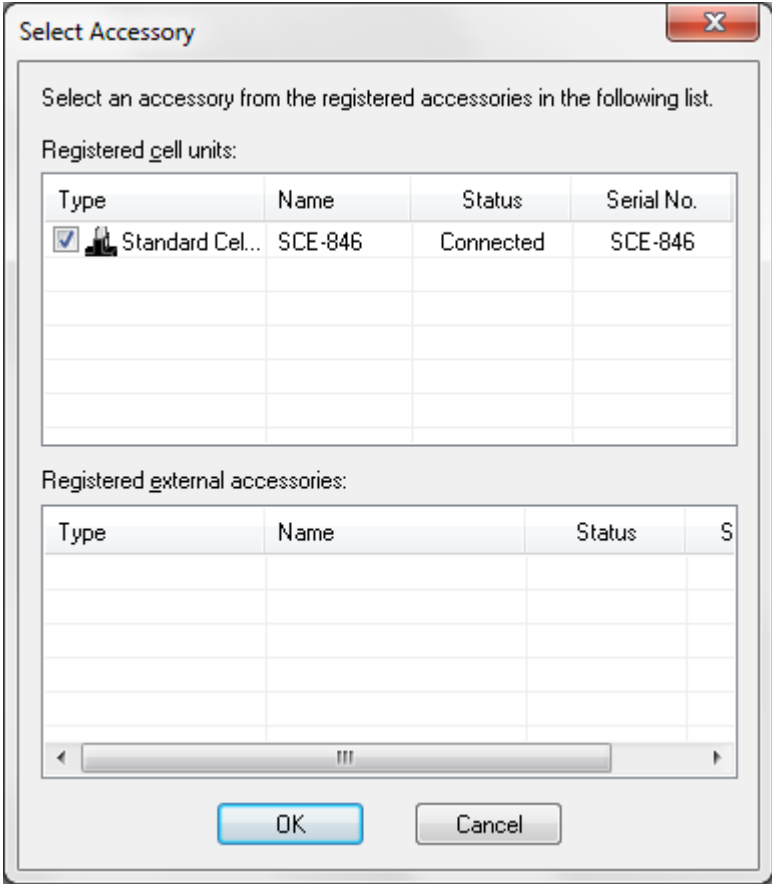
Figure 6.19 [Select Accessory] dialog box

| Note: | In the CFR version, the function for automatically starting registered programs for accessories is not provided. |

6.4.9 [Accessory Model Number]

When an accessory that has been registered is attached, the accessory name is displayed as a command on the [Control] menu (see Fig. 6.20). Select the command to control the attached accessory.
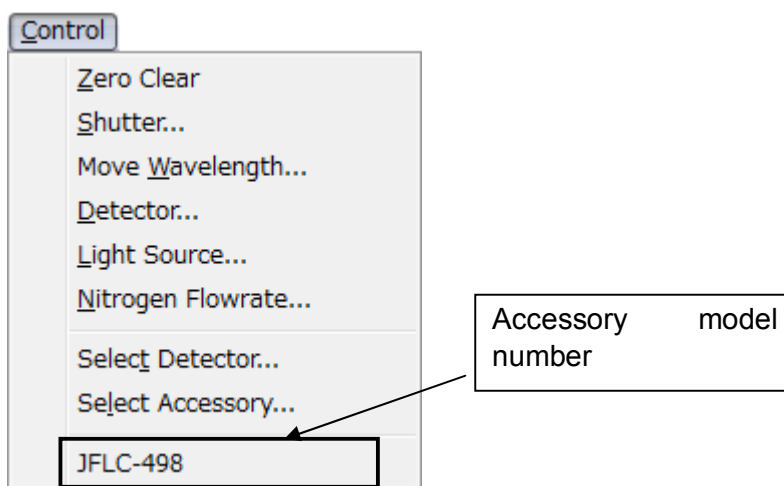
Figure 6.20 [Control] dialog box

Note 1: Use this function to return the temperature of the Peltier device to room temperature after measuring data at high or low temperatures to set a target temperature after inserting a sample.
Note 2: This operation can also be performed by clicking the <Setting...> button in the accessory bar.

6.5 [View] Menu

Specifies the view options.

6.5.1   [Scales...]

Specifies the display scale for the spectrum.
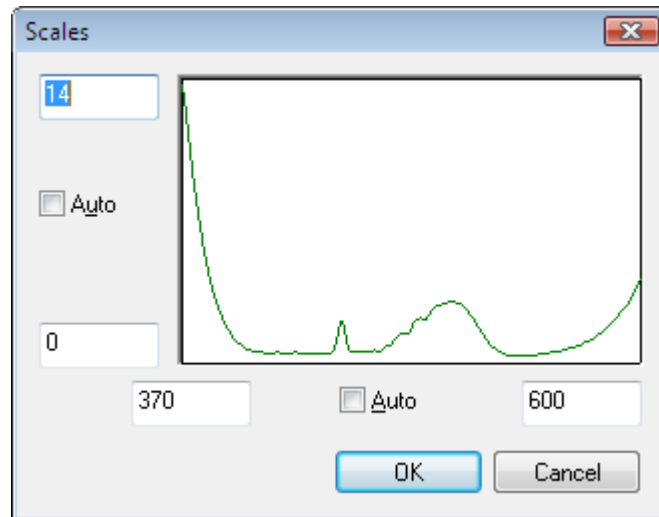
Figure 6.21 [Scales] dialog box

Horizontal axis	Enters the scale for the horizontal axis. Selecting the [Auto] check box displays the entire range irrespective of the entered values.
Vertical axis	Enters the scale for the vertical axis. Selecting the [Auto] check box displays the graph at the optimal scale for the specified horizontal axis range.
<OK>	Applies the changes to the [Scales] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Scales] settings.

Note: This operation can also be performed by clicking the tool button 🔲 *[Scales].*

6.5.2   [Patterns...]

Selects the display color and line style for the spectrum.
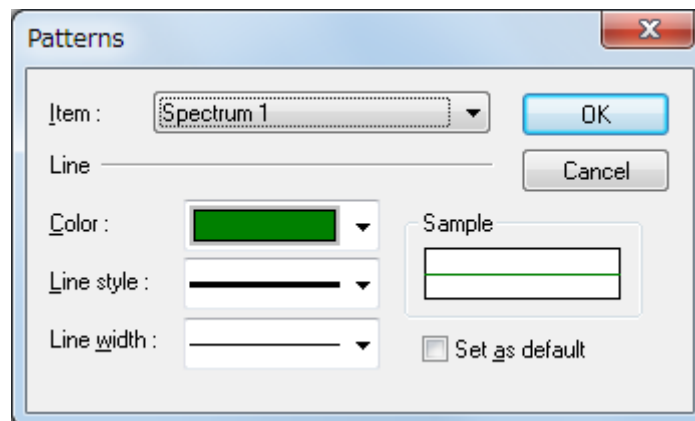
Figure 6.22 [Patterns] dialog box

[Item]	Selects an item from spectra 1 to 16, frame, gridlines, and auxiliary gridlines to change its color and line style.
[Color]	Shows the available colors for the selected item in the drop-down list.
[Line style]	Shows the available line styles. The currently selected item in the [Item] drop-down list is displayed with the selected line style.
[Line width]	Shows the available line widths. The currently selected item in the [Item] drop-down list is displayed with the selected line width.
Sample	Displays a sample of the selected pattern.
[Set as default]	Applies the selected patterns to all subsequently opened Views.
<OK>	Applies the changes to the [Patterns] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Patterns] settings.

Note: This operation can also be performed by clicking the tool button 🟦 *[Patterns].*

6.5.3   [Fonts...]

Specifies the display font for the data.
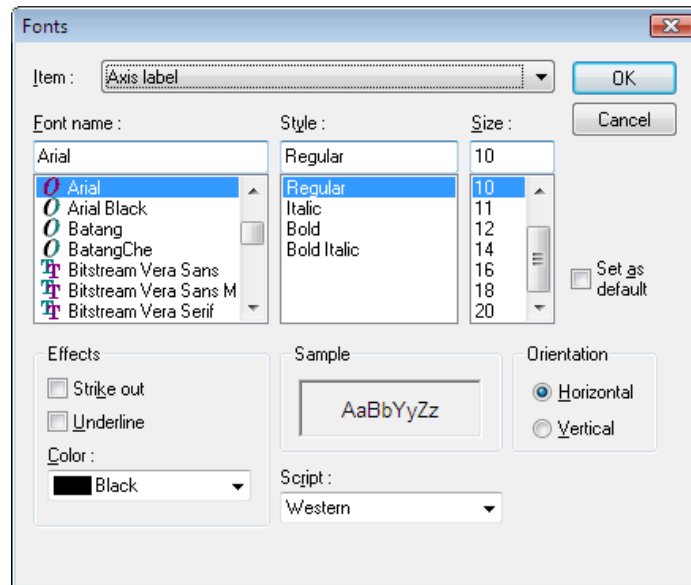
Figure 6.23 [Fonts] dialog box

| [Item]	Selects an item to change its font settings.
	[Axis label]: Character ([CD (mdeg)], [nm], or other)
	[Scale label]: Numeric value
[Font name]	Lists available font names.
[Style]	Lists available styles.
[Size]	Lists available sizes.
Effects	Selects strikeout and underline effects.
	[Strike out]: Draws a line through the middle of the text.
	[Underline]: Underlines the text.
Sample	Displays a sample of the specified font.
Orientation	Selects the orientation for displaying the axis label.
	[Horizontal]: Displays the y-axis label horizontally
	[Vertical]: Displays the y-axis label vertically
[Set as default]	Applies the specified fonts to all subsequently opened Views.
[Color]	Shows the available colors for the selected item in the drop-down list.
[Script]	Selects the language for the specified font.
<OK>	Applies the changes to the [Fonts] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Fonts] settings.

Note: This operation can also be performed by clicking the tool button *[Fonts].*

94

6.5.4　　[Gridlines...]

Shows/hides the gridlines for the data.
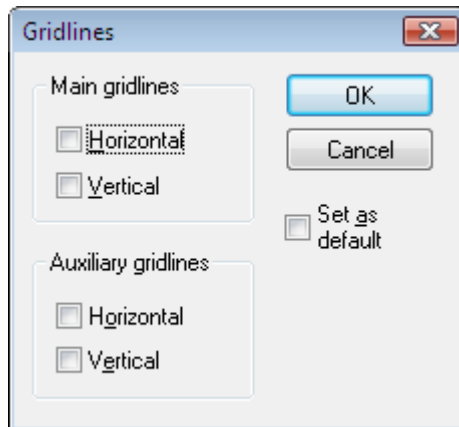
Figure 6.24 [Gridlines] dialog box

Main gridlines	
[Horizontal]	Displays major horizontal axis gridlines.
[Vertical]	Displays major vertical axis gridlines.
Auxiliary gridlines	
[Horizontal]	Displays minor horizontal axis gridlines.
[Vertical]	Displays minor vertical axis gridlines.
[Set as default]	Applies the selected gridlines to all subsequently opened Views.
<OK>	Applies the changes to the [Gridlines] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Gridlines] settings.

Note:　This operation can also be performed by clicking the tool button *[Gridlines].*

6.5.5   [Styles...]

Specifies the display style for the spectrum.
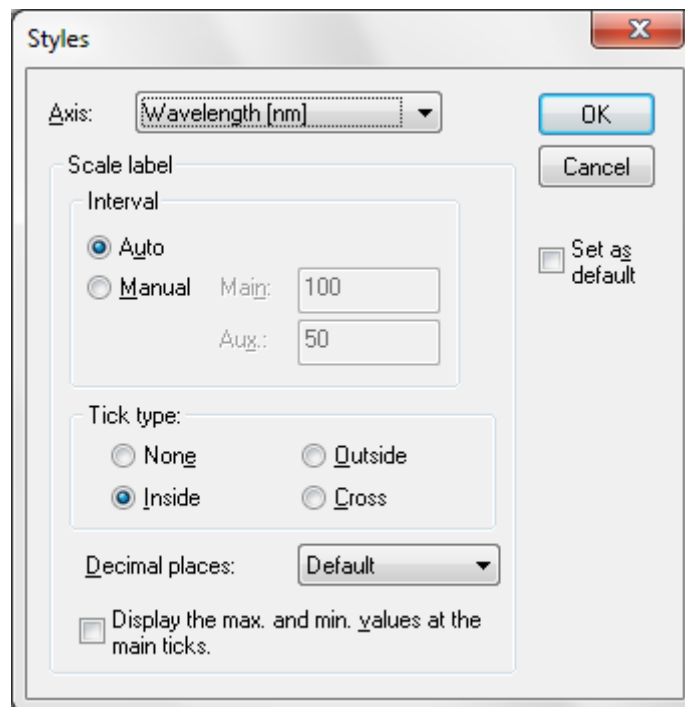
Figure 6.25 [Styles] dialog box

[Axis]	Selects an item to change its display style.
Interval	
[Auto]	Automatically selects the gridline format.
[Manual]	Manually specifies the gridline format for the main and auxiliary scales.
Tick type	
[None]	Displays no ticks on the axis
[Outside]	Displays ticks on the outside of the axis.
[Inside]	Displays ticks on the inside of the axis.
[Cross]	Displays ticks on both sides of the axis.
[Decimal places]	Selects the number of decimal places for the display values on the horizontal and vertical axes.
[Display the max. and min. values at the main ticks]	Displays the maximum and minimum values at the main ticks. Values at the auxiliary ticks are not displayed.
[Set as default]	Applies the specified styles to all subsequently opened Views.
<OK>	Applies the changes to the [Styles] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Styles] settings.

Note: This operation can also be performed by clicking the tool button ▥ *[Styles].*

6.5.6 [Overlay]

Overlays the spectra in the spectrum measurement display field when cycle measurement is selected.

6.5.7 [Select Graph...]

Selects the graph to display in the data display field.
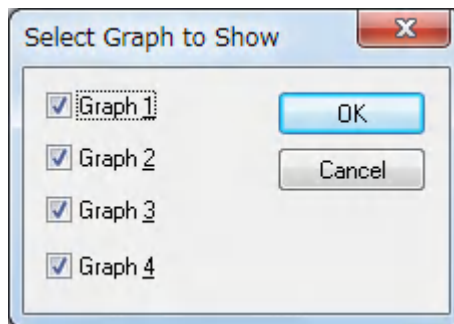
Figure 6.26 [Select Graph to Show] dialog box

[Graph 1]	Displays graph for photometric mode 1 as graph 1 in the data display field.
[Graph 2]	Displays graph for photometric mode 2 as graph 2 in the data display field.
[Graph 3]	Displays graph for photometric mode 3 as graph 3 in the data display field.
[Graph 4]	Displays graph for photometric mode 4 as graph 4 in the data display field.
<OK>	Selects the graph to display and closes the dialog box.
<Cancel>	Closes the dialog box without selecting a graph to display.

6.5.8 [Information Bar]

Shows/hides the information bar.

6.5.9 [Accessory Bar]

Shows/hides the accessory bar.

6.5.10 [Toolbars]

Shows/hides toolbars.

[File]	Shows/hides the toolbar corresponding to the [File] menu.
[Measure]	Shows/hides the toolbar corresponding to the [Measure] menu.
[Control]	Shows/hides the toolbar corresponding to the [Control] menu.
[View]	Shows/hides the toolbar corresponding to the [View] menu.

6.5.11 [Status Bar]

Shows/hides the status bar.

6.5.12   [View Mode]

Displays the photometric value in digital or graph mode in the photometric value monitor.
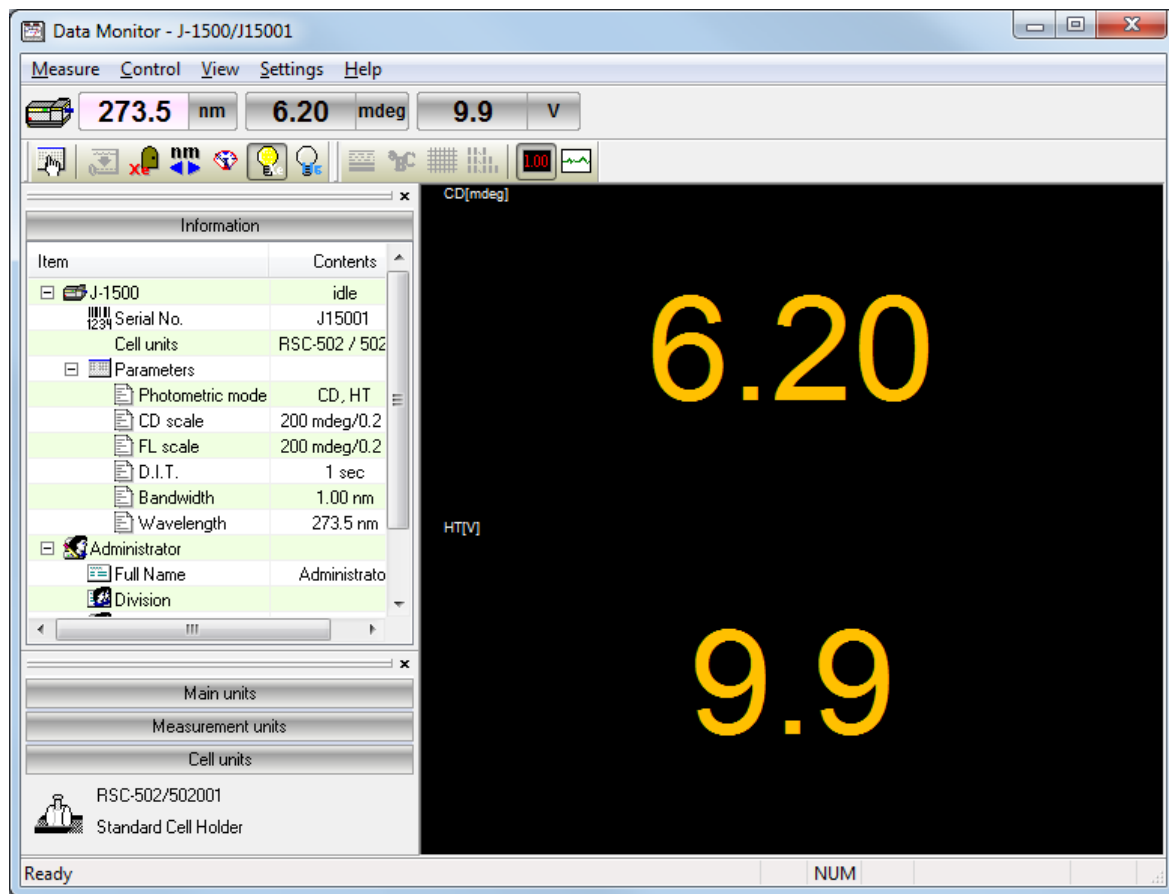
Figure 6.27 Digital mode of the photometric value monitor
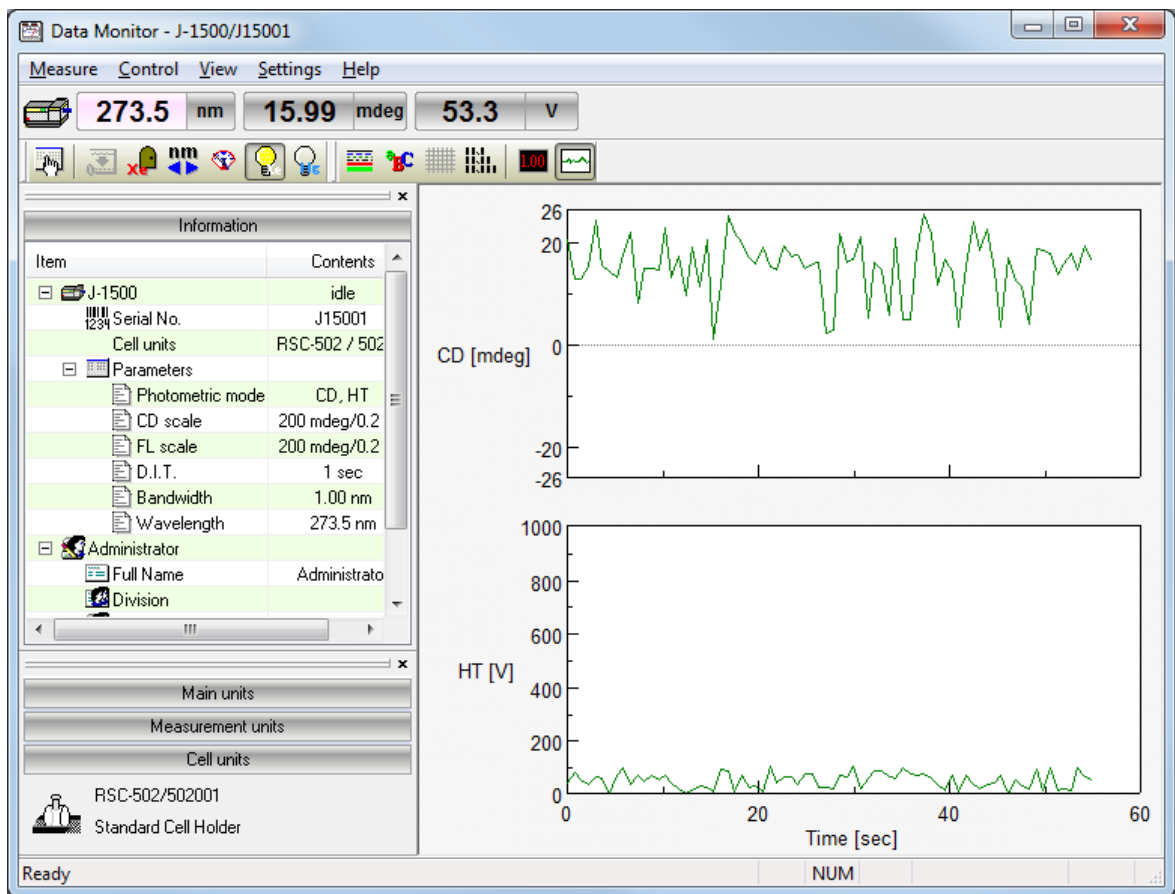
Figure 6.28 Graph mode of the photometric value monitor

6.5.13　[Graph View]

Specifies [Patterns], [Fonts], [Gridlines] and [Styles] when graph mode is selected for the photometric value monitor. Refer to Sections 6.5.2 [Patterns...], 6.5.3 [Fonts...], 6.5.4 [Gridlines...] and 6.5.5 [Styles...] for details about setting each command.

6.6　[Settings] Menu
6.6.1　[Default Parameters...]

Note: In the CFR version, this function is not available.

Specifies measurement parameters for running the measurement program based on the currently recognized accessory. Default parameters can be specified for each accessory. Attach the accessory to be used and specify its default parameters.
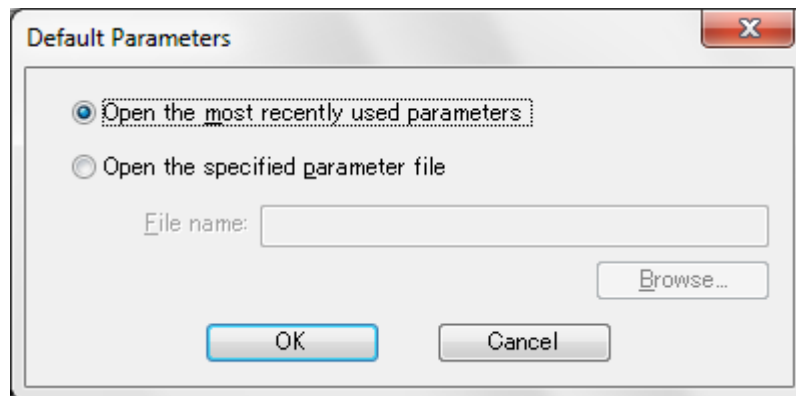
Figure 6.29 [Default Parameters] dialog box

[Open the most recently used parameters]	Starts with the parameters previously specified before exiting the measurement program.
[Open the specified parameter file]	Starts with a specified parameter file.
[File name]	Displays the name of path to the parameter file when the [Open the specified parameter file] option button is selected.
<Browse...>	Selects the drive and file name for a saved parameter file (see Fig. 6.30).
<OK>	Applies the changes to the [Default Parameters] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Default Parameters] settings.
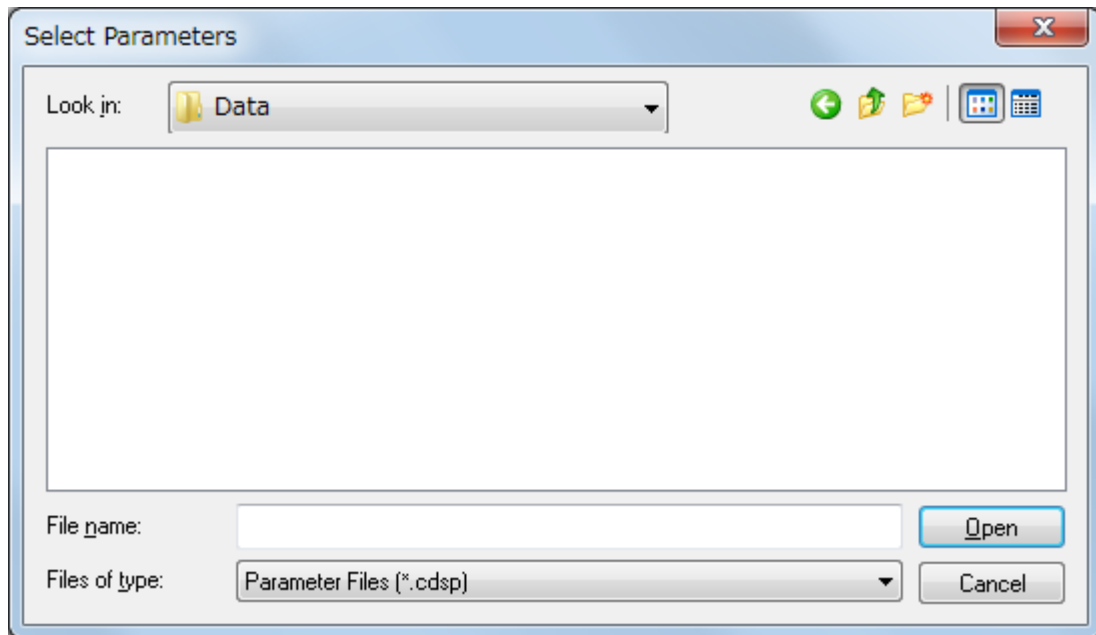
Figure 6.30 [Select Parameters] dialog box (when <Browse...> is clicked in [Default Parameters])

6.6.2   [Customize Toolbar...]

Customizes and shows/hides toolbars.
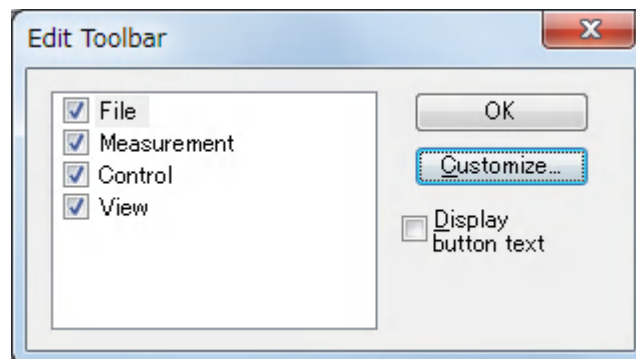
Figure 6.31 [Edit Toolbar] dialog box

[File]	Shows/hides the toolbar corresponding to the [File] menu and adds/removes the following tool buttons.

Button	Name
🖫	[Save]
〰️	[Send to Analysis]
📂	[Open Parameters]]
🖫	[Save Parameters]

[Measurement]	Shows/hides the toolbar corresponding to the [Measure] menu and adds/removes the following tool buttons.

Button	Name
	[Cancel]
	[Sample Measurement]
	[Baseline Measurement]/ [Blank Measurement]
	[DC Dark Measurement]
	[Parameters]

[Control]	Shows/hides the toolbar corresponding to the [Control] menu and adds/removes the following tool buttons.

Button	Name
	[Auto Zero]
	[Shutter]
	[Move Wavelength]
	[Sensitivity]
	[Light Source][Hg Lamp]

[View]	Shows/hides the toolbar corresponding to the [View] menu and adds/removes the following tool buttons.

Button	Name
	[Scales]
	[Patterns]
	[Fonts]
	[Gridlines]
	[Styles]
	[Digital]
	[Graph]

[Display button text]	Displays the button name under each tool button.
<Customize...>	Displays the dialog box for customizing toolbars (see Fig. 6.32).

Figure 6.32 [Customize Toolbar] dialog box

6.6.3 [Monitor Bar...]

Customizes the style for the monitor bar.
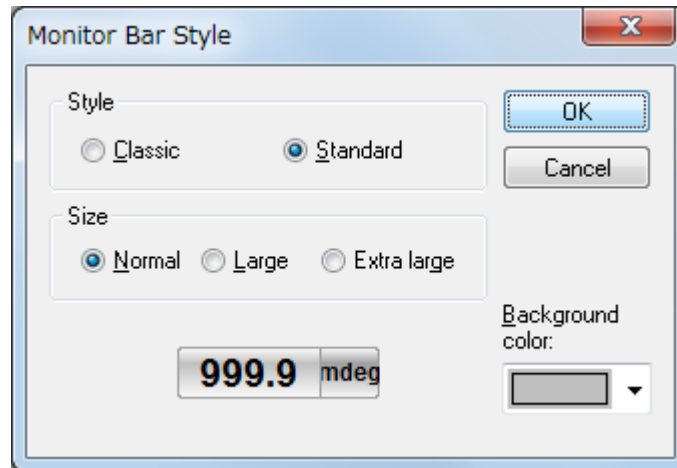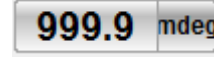
Figure 6.33 [Monitor Bar Style] dialog box

[Style]	Selects the style for the monitor bar. [Classic]: [Standard]:
[Size]	Selects the size for the monitor bar. Size: [Normal], [Large], [Extra large]
[Background color]	Selects the background color for the monitor bar when [Standard] is selected for [Style].

6.7 [Help] Menu
6.7.1 [About...]

Displays version information for each measurement program.

7. [Spectra Measurement] Program Reference

The [Spectra Measurement] program measures the change in the sample signal intensity while scanning the wavelength. This chapter describes specific measurement parameters for the [Spectra Measurement] program.

7.1 [Parameters...]

Specifies measurement parameters.

The window has four tabs for parameter settings, as shown in Figs 7.2 [General], Fig. 7.3 [Control], Fig. 7.4 [Information], and Fig. 7.5 [Data].

The [General] tab is open by default in the [Parameters] dialog box. The page can be changed by clicking each tab at the top of the dialog box.

The parameters can be switched between two modes: Basic mode and Advanced mode. In Basic mode, the choice of parameters is partially limited. In Advanced mode, each parameter is specified individually.

<Basic Mode/Advanced Mode>	Switches between Basic and Advanced modes. Advanced mode can only be used for J-1500.
<Open...>	Opens a measurement parameter file.
<Save...>	Saves the measurement parameters. In the CFR version, an electronic signature is required for saving parameters.
<Default>	Restores the parameters of the [General] and [Control] tabs to their default values, and resets the [Information] and [Data] tabs to their previous settings.
<OK>	Applies the changes to the [Parameters] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Parameters] settings.

Note 1: This operation can also be performed by clicking the tool button [icon] [Parameters].

Note 2: In the CFR version, Managers or Analysts authority is required to specify the parameters.

Note 3: In the CFR version, when the parameters are specified or changed, a signature is required. Clicking the <OK> button when the parameters have not been saved displays the following message.

Figure 7.1 Message when the signature for the parameters is missing

7.1.1   [General] tab
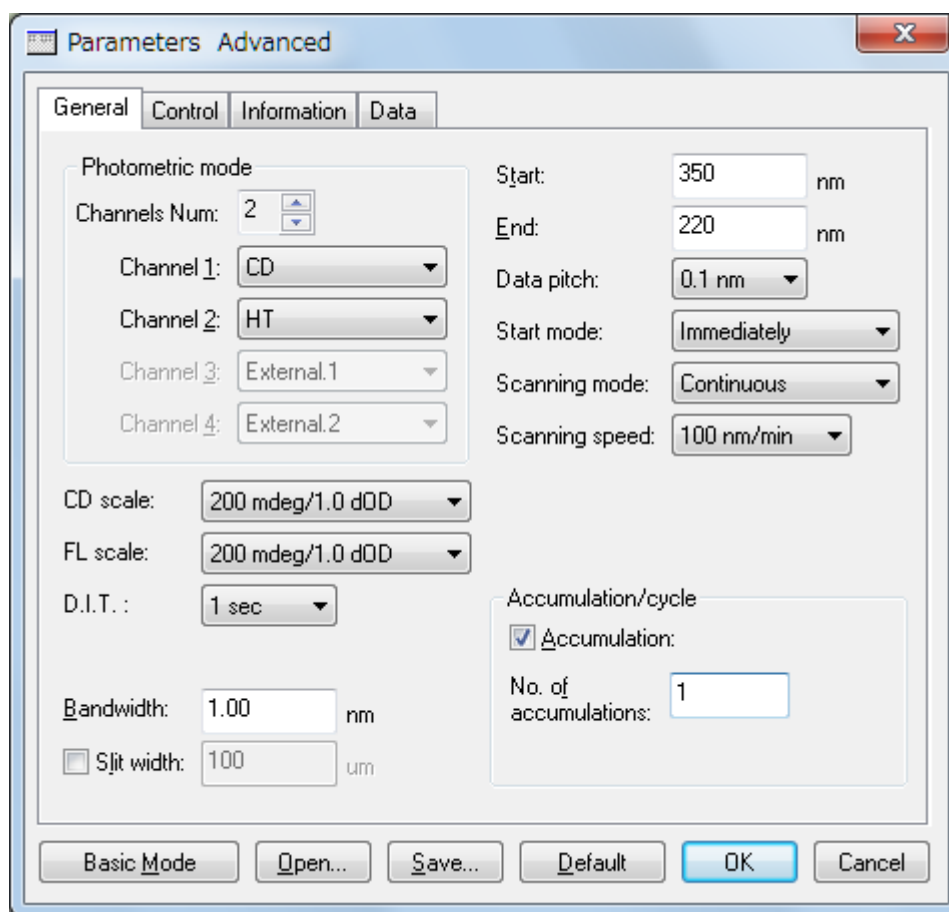
Figure 7.2 [General] tab in [Parameters] dialog box

Photometric mode	Selects the desired measurement parameters for the photometric mode.
[Channels Num]	Selects the number of channels to display in the spectrum display field. Click the arrow (▼ or ▲) to select the number of channels. Setting range: 1 to 4
[Channel n]	Selects the photometric mode for each channel. Click the drop-down list to select the photometric mode.
[CD scale]	Selects the CD/LD range for the detector in the transmission configuration. [20 mdeg/0.05 dOD]: High sensitivity mode. Available when the CD range is within ±20 mdeg and the LD range is within ±0.05 dOD. [200 mdeg/1.0 dOD]: Standard sensitivity mode. Available when the CD range is within ±200 mdeg and the LD range is within ±1.0 dOD. [2000 mdeg/1.0 dOD]: Wide range mode. Available when the CD range is within ±2000 mdeg and the LD range is within ±1.0 dOD. [10000 mdeg/1.0 dOD]: Maximum range mode. Available when

	the CD range is within ±10000 mdeg and the LD range is within ±1.0 dOD.
[FL scale]	Selects the FDCD/FDLD range for the C detector in the fluorescence configuration.
	[20 mdeg/0.05 dOD]: High sensitivity mode. Available when the FDCD range is within ±20 mdeg and the FDLD range is within ±0.05 dOD.
	[200 mdeg/1.0 dOD]: Standard sensitivity mode. Available when the FDCD range is within ±200 mdeg and the FDLD range is within ±1.0 dOD.
	[2000 mdeg/1.0 dOD]: Wide range mode. Available when the FDCD range is within ±2000 mdeg and the FDLD range is within ±1.0 dOD.
	[10000 mdeg/1.0 dOD]: Maximum range mode. Available when the FDCD range is within ±10000 mdeg and the FDLD range is within ±1.0 dOD.
[D.I.T.]	Selects the data acquisition time (integration time) per point. J-1100: 5 msec to 8 sec J-1500: 0.1 msec to 30 sec
[Bandwidth]	Selects the spectral bandwidth. J-1100: 1 nm (fixed) J-1500: 0.01 nm to 16.00 nm
[Slit width]	Specifies the slit width within the range from 1 to 4000 μm. Selecting [Slit width] activates the text box for entering the slit width. *Note: This command is not displayed for J-1100 or in Basic mode for J-1500.*
[Start]	Specifies the measurement start wavelength. J-1100: 180 to 600 nm J-1500: 163 to 1600 nm
[End]	Specifies the measurement end wavelength. J-1100: 180 to 600 nm J-1500: 163 to 1600 nm
[Data pitch]	Selects the wavelength interval for data acquisition.
[Start mode]	Selects the measurement start condition. Options: [Immediately], [Wait for ext trigger] Use [Wait for ext. trigger] when an optional accessory such as a stopped flow system is used.
[Scanning mode]	Selects the scanning mode. Options:
	[Continuous]: Continuous scan. Scans the wavelength at the speed specified in [Scanning

106

	speed].
	[Step]: Step scan. Increments the wavelength in steps corresponding to the data wavelength interval, and performs measurements at each wavelength for a time specified by [D.I.T.] while the drive is stopped. The scanning speed depends on [D.I.T.]. In this case, the D.I.T. value is chosen automatically and cannot be selected.
	[Step (Auto)]: Performs a step scan while automatically adjusting D.I.T. to obtain a constant signal-to-noise ratio. Selecting [Step (Auto)] displays [D.I.T. Upper] and [D.I.T. Lower] instead of [D.I.T.]. Click the arrows to display the drop-down lists and select the desired values. In the low signal-to-noise ratio region, the D.I.T. is automatically set between [D.I.T. Upper] and [D.I.T. Lower].
[Scanning speed]	Specifies the scanning speed. Available if [Continuous] is selected for [Scanning mode].
Accumulation/cycle	
[No. of cycles]	Specifies the number of measurements for each sample. When 2 or more measurements are specified, the [Cycle interval] text box is displayed. Input range: 1 to 999 *Note: When the [Accumulation] check box is selected, [No. of cycles] is not displayed.*
[Accumulation]	Specifies that cumulative averaging should be used to measure the spectrum. Selecting [Accumulation] displays [No. of accumulations].
[No. of accumulations]	Specifies the number of measurements used to average the spectrum. If measurement is stopped, all completed accumulations are averaged.

7.1.2   [Control] tab
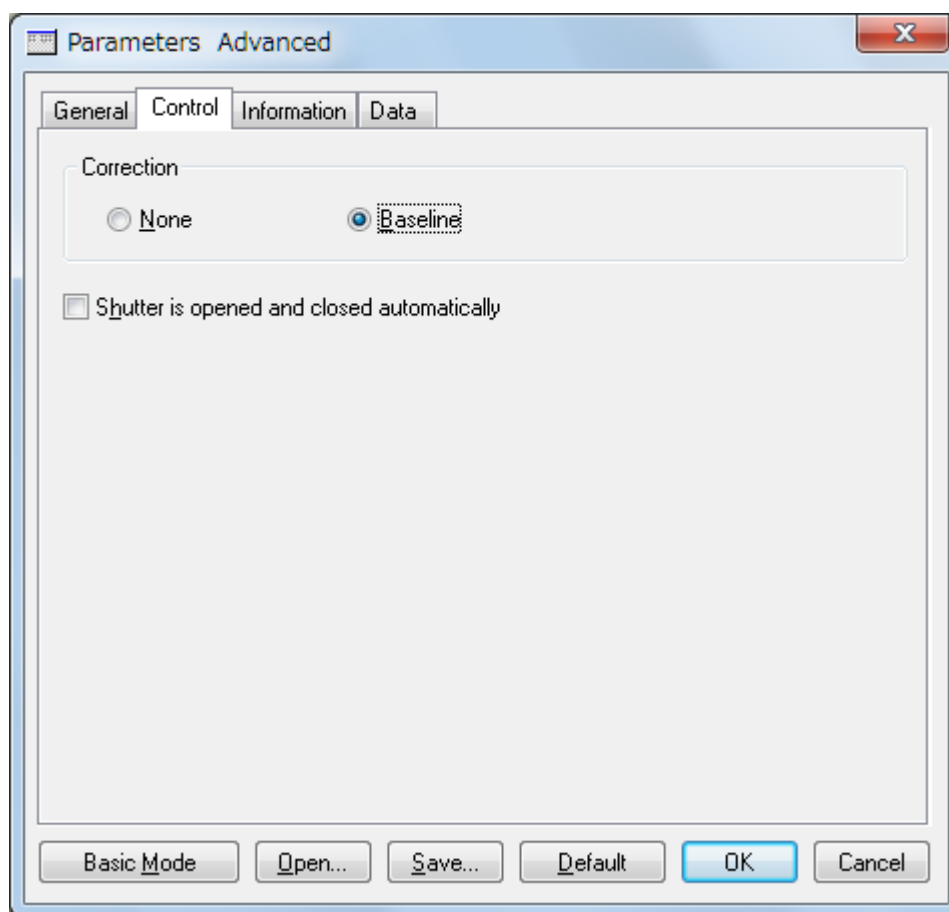
Figure 7.3 [Control] tab in [Parameters] dialog box

Correction	
[None]	Selects the use of no correction.
[Baseline]	Selects baseline correction using a measured baseline.
[Shutter is opened and closed automatically]	Automatically opens the shutter just before the measurement starts and closes it after the measurement finishes, regardless of the current shutter status. Even when this option is selected, if cycle measurement is selected, the shutter is not closed between measurements.

7.1.3 [Information] tab
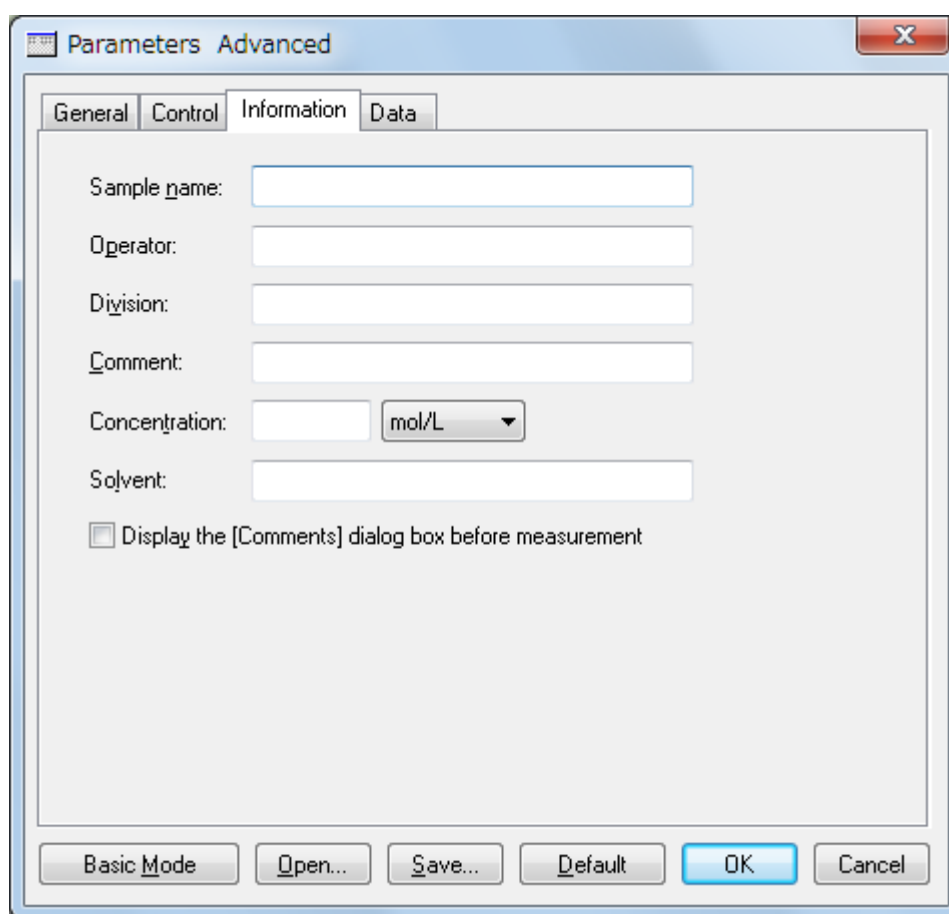
Figure 7.4 [Information] tab in [Parameters] dialog box

[Sample name]	Enters a sample name (maximum 63 characters).
[Operator]	Enters an operator name (maximum 63 characters).
[Division]	Enters a division name for the operator (maximum 127 characters).
[Comment]	Enters a comment (maximum 127 characters).
[Concentration]	Enters a sample concentration. There is no character limit.
[Solvent]	Enters a solvent name (maximum 127 single-byte characters).
[Display the [Comments] dialog box before measurement]	Displays the [Comments] dialog box for each measurement.

Note: In the CFR version, the [Operator] and [Division] text boxes cannot be changed by the user.

7.1.4   [Data] tab
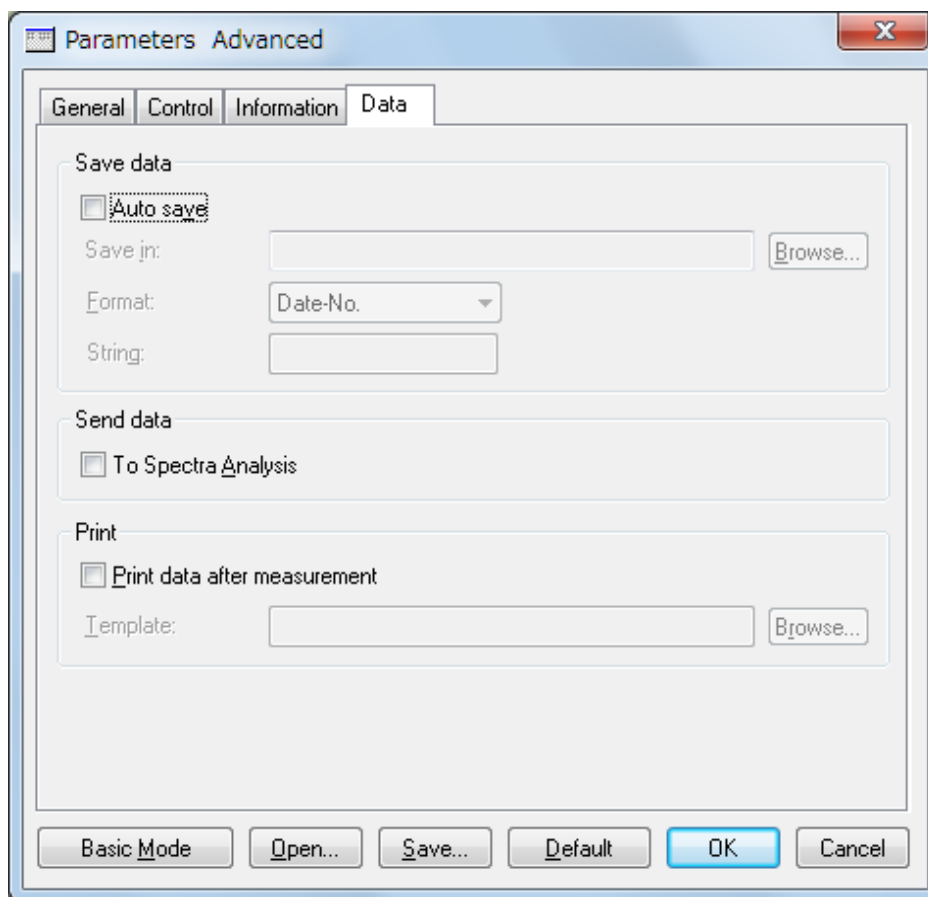
Figure 7.5 [Data] tab in [Parameters] dialog box

Save data	Selects to automatically save data. A file name is automatically allocated to the measured data and the data is saved to the specified directory.
	Note: In the CFR version, when [Auto save] is selected, the following dialog box is displayed when the sample measurement starts. Start the measurement after typing a signature. Figure 7.6 [Creation Signature (Auto Save)] dialog box
[Auto save]	Automatically saves measured data.
[Save in]	Displays the drive and folder name for saving data.

<Browse...>	Browses to the [Save in] drive and folder.
[Format]	Selects the file name to be assigned during auto saving. The file format is Standard Files (*.jws).
[Date-No.]	Sets [Date] + [3-digit serial number] as the file name. The date and serial number are connected with a hyphen "-".
[Sample-No.]	Sets [Sample name] + [3-digit serial number] as the file name. [Sample name] is the name entered in the [Information] tab.
[Comment-No.]	Sets [Comment] + [3 digit serial number] as the file name. [Comment] is the comment entered in the [Information] tab.
[Sample-Comment-No.]	Sets [Sample name] + [Comment] + [3-digit serial number] as the file name. [Sample name] and [Comment] are the name and comment entered in the [Information] tab, respectively.
[String-No.]	Sets [String-No.] + [3-digit serial number] as the file name. Type the character string in the text box below the drop-down list (maximum 63 single-byte characters).
[String]	Enters a character string when [String-No.] is selected for [Format] (maximum 63 single-byte characters).
Send data	Selects to automatically send measured data to the [Spectra Analysis] program after measurement.
[To Spectra Analysis]	Automatically sends measured data to the [Spectra Analysis] program after measurement.
Print	Selects to automatically print data after measurement.
[Print data after measurement]	Automatically prints data after measurement.
[Template]	Displays the drive and file name of a saved template file.
<Browse...>	Selects the drive and file name of a saved template file.

8. [Time Course Measurement] Program Reference

The [Time Course Measurement] program measures the temporal change in the sample signal intensity at a fixed wavelength. This chapter describes specific measurement parameters for the [Time Course Measurement] program.

8.1 [Parameters...]

Specifies the measurement parameters.

The window has four tabs for parameter settings, as shown in Figs 8.2 [General], Fig. 8.3 [Control], Fig. 8.4 [Information], and Fig. 8.5 [Data]. The [General] tab is open by default in the [Parameters] dialog box. The page can be changed by clicking each tab at the top of the dialog box.

The parameters can be switched between two modes: Basic mode and Advanced mode. In Basic mode, the choice of parameters is partially limited. In Advanced mode, each parameter is specified individually.

<Basic Mode/Advanced Mode>	Switches between Basic and Advanced modes. Advanced mode can only be used for J-1500.
<Open...>	Opens a measurement parameter file.
<Save...>	Saves the measurement parameters. In the CFR version, an electronic signature is required for saving parameters.
<Default>	Restores the parameters of the [General] and [Control] tabs to their default values, and resets the [Information] and [Data] tabs to their previous settings.
<OK>	Applies the changes to the [Parameters] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Parameters] settings.

Note 1: This operation can also be performed by clicking the tool button [button icon] *[Parameters].*
Note 2: In the CFR version, Managers or Analysts authority is required to specify the parameters.
Note 3: In the CFR version, when the parameters are specified or changed, a signature is required. Clicking the <OK> button when the parameters have not been saved displays the following message.

Figure 8.1 Message when the signature for the parameters is missing

8.1.1 [General] tab
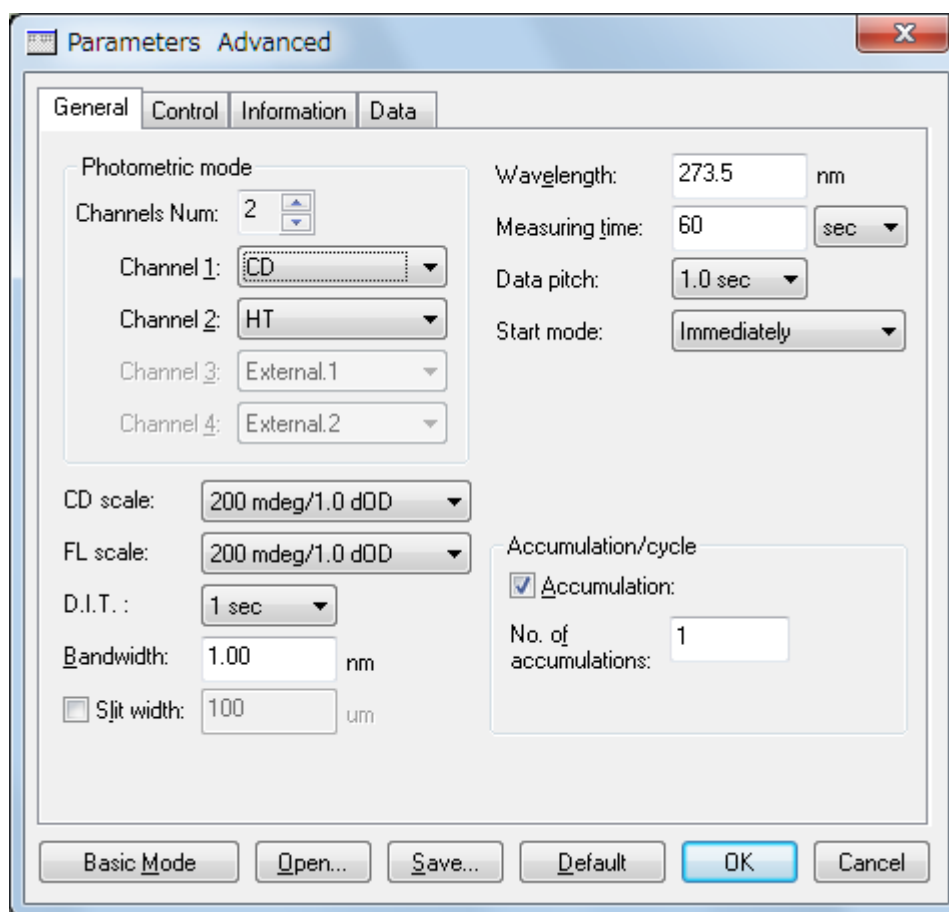
Figure 8.2 [General] tab in [Parameters] dialog box

Photometric mode	Selects the desired measurement parameters for the photometric mode.
[Channels Num]	Click the arrow (▼ or ▲) and select [Channels Num:] to display in the time-course data display field. Setting range: 1 to 4
[Channel *n*]	Selects the photometric mode for each channel. Click the drop-down list to select the photometric mode.
[CD scale]	Selects the CD/LD scale range for the detector in the transmission configuration. [20 mdeg/0.05 dOD]: High sensitivity mode. Available when the CD range is within ±20 mdeg and the LD range is within ±0.05 dOD. [200 mdeg/1.0 dOD]: Standard sensitivity mode. Available when the CD range is within ±200 mdeg and the LD range is within ±1.0 dOD. [2000 mdeg/1.0 dOD]: Wide range mode. Available when the CD range is within ±2000 mdeg and the LD range is within ±1.0 dOD.

	[10000 mdeg/1.0 dOD]: Maximum range mode. Available when the CD range is within ±10000 mdeg and the LD range is within ±1.0 dOD.
[FL scale]	Selects the FDCD/FDLD scale range for the C detector in the fluorescence configuration. [20 mdeg/0.05 dOD]: High sensitivity mode. Available when the FDCD range is within ±10 mdeg and the FDLD range is within ±0.05 dOD. [200 mdeg/1.0 dOD]: Standard sensitivity mode. Available when the FDCD range is within ±200 mdeg and the FDLD range is within ±1.0 dOD. [2000 mdeg/1.0 dOD]: Wide range mode. Available when the FDCD range is within ±2000 mdeg and the FDLD range is within ±1.0 dOD. [10000 mdeg/1.0 dOD]: Maximum range mode. Available when the FDCD range is within ±10000 mdeg and the FDLD range is within ±1.0 dOD.
[D.I.T.]	Selects the data acquisition time (integration time) per point. J-1100: 5 msec to 8 sec J-1500: 0.1 msec to 30 sec
[Bandwidth]	Selects the spectral bandwidth. J-1100: 1 nm (fixed) J-1500: 0.01 nm to 16.00 nm
[Slit width]	Specifies the slit width within the range from 1 to 4000 μm. Selecting [Slit width] activates the text box for entering the slit width. Note: This command is not displayed for J-1100 or in Basic mode for J-1500.
[Wavelength]	Specifies the measurement start wavelength. J-1100: 180 to 600 nm J-1500: 163 to 1600 nm
[Measuring time]	Specifies the measurement time. Input range: 2 to12002 sec
[Data pitch]	Selects the wavelength interval for data acquisition.
[Start mode]	Selects the measurement start condition. Options: [Immediately], [Wait for ext trigger] Use [Wait for ext. trigger] when an optional accessory such as a stopped flow system is used.
Accumulation/cycle	
[No. of cycles]	Specifies the number of measurements for each sample. When 2 or more measurements are specified, the [Cycle interval] text box is displayed.

114

	Input range: 1 to 999
	Note: *When the [Accumulation] check box is selected, [No. of cycles] is not displayed.*
[Accumulation]	Specifies that cumulative averaging should be used to measure the spectrum. Selecting [Accumulation] displays [No. of accumulations].
[No. of accumulations]	Specifies the number of measurements used to average the spectrum. If measurement is stopped, all completed accumulations are averaged. Input range: 1 to 999.

8.1.2 [Control] tab
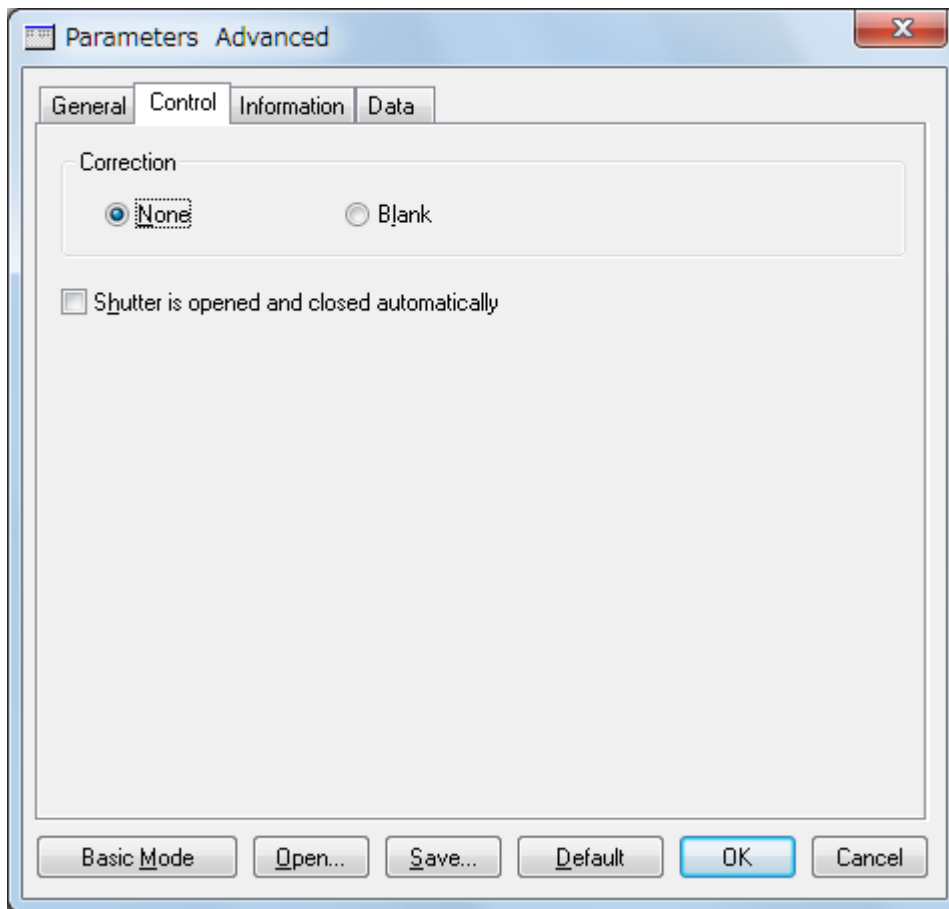
Figure 8.3 [Control] tab in [Parameters] dialog box

Correction	
[None]	Selects the use of no correction.
[Blank]	Selects blank correction using a measured blank.
[Shutter is opened and closed automatically]	Automatically opens the shutter just before the measurement starts and closes it after the measurement finishes, regardless of the current shutter status. Even when this option is selected, if cycle measurement is selected, the shutter is not closed between measurements.

8.1.3 [Information] tab
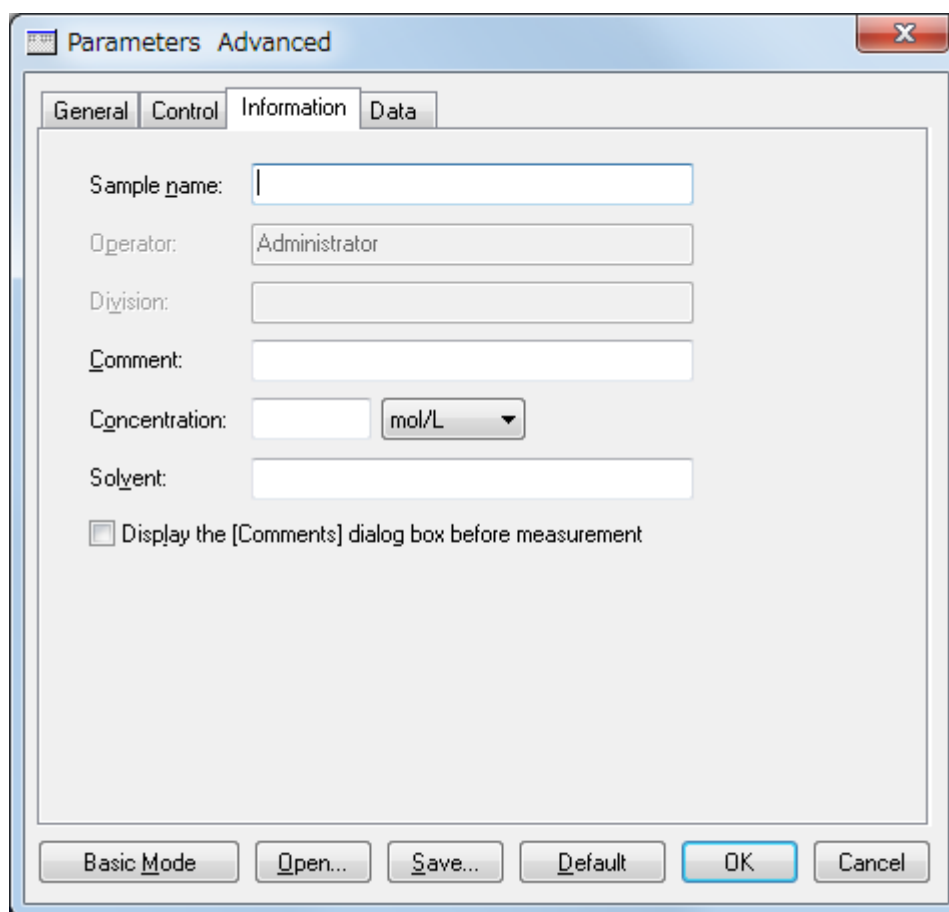
Figure 8.4 [Information] tab in [Parameters] dialog box

[Sample name]	Enters a sample name (maximum 63 characters).
[Operator]	Enters an operator name (maximum 63 characters).
[Division]	Enters a division name for the operator (maximum 127 characters).
[Comment]	Enters a comment (maximum 127 characters).
[Concentration]	Enters a sample concentration. There is no character limit.
[Solvent]	Enters a solvent name (maximum 127 single-byte characters).
[Display the [Comments] dialog box before measurement]	Displays the [Comments] dialog box for each measurement.

Note: In the CFR version, the [Operator] and [Division] text boxes cannot be changed by the user.

8.1.4 [Data] tab
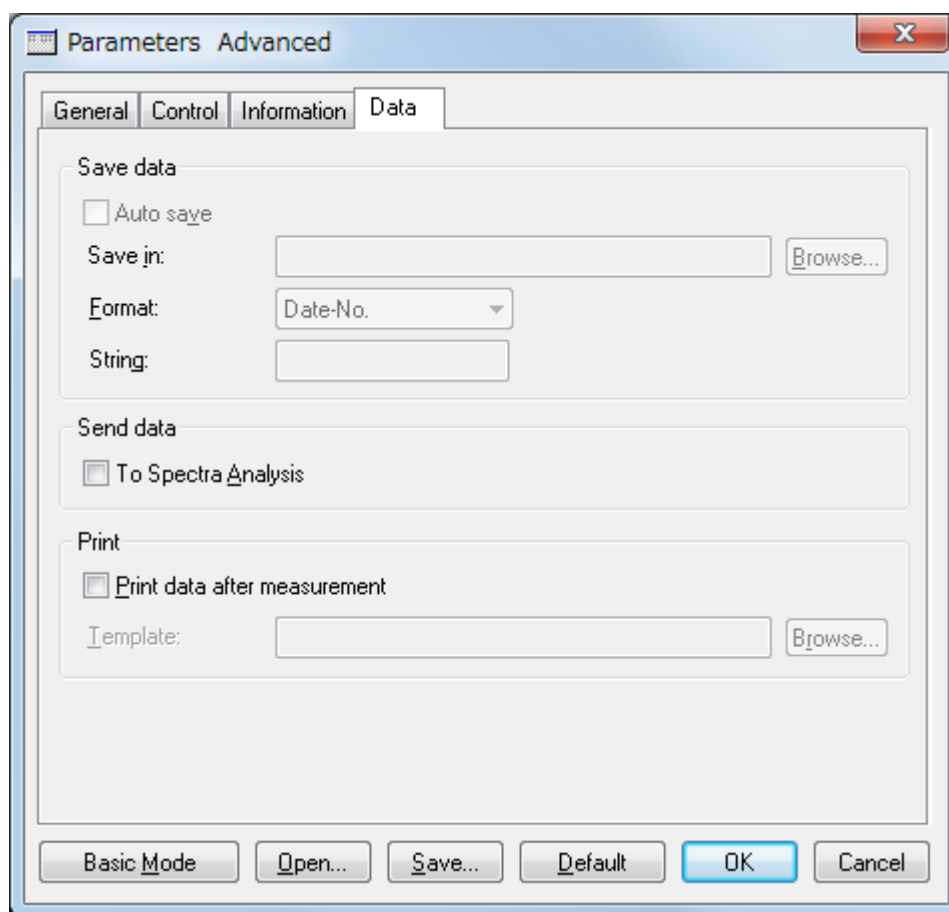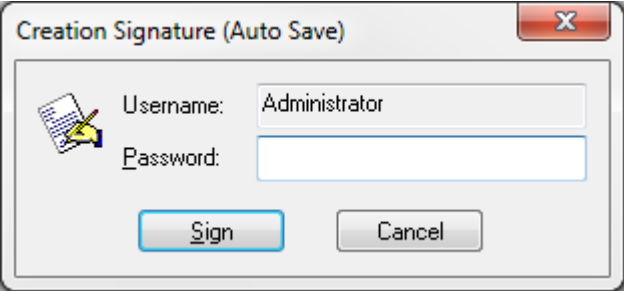
Figure 8.5 [Data] tab in [Parameters] dialog box

Save data	Selects to automatically save data. A file name is automatically allocated to the measured data and the data is saved to the specified directory. *Note: In the CFR version, when [Auto save] is selected, the following dialog box is displayed when the sample measurement starts. Start the measurement after typing a signature.* Figure 8.6 [Creation Signature (Auto Save)] dialog box
[Auto save]	Automatically saves measured data
[Save in]	Displays the drive and folder name for saving data.

<Browse...>	Browses to the [Save in] drive and folder.
[Format]	Selects the file name to be assigned during auto saving. The file format is Standard Files (*.jws).
[Date-No.]	Sets [Date] + [3-digit serial number] as the file name. The date and serial number are connected with a hyphen "-".
[Sample-No.]	Sets [Sample name] + [3-digit serial number] as the file name. [Sample name] is the name entered in the [Information] tab.
[Comment-No.]	Sets [Comment] + [3 digit serial number] as the file name. [Comment] is the comment entered in the [Information] tab.
[Sample-Comment-No.]	Sets [Sample name] + [Comment] + [3-digit serial number] as the file name. [Sample name] and [Comment] are the name and comment entered in the [Information] tab, respectively.
[String-No.]	Sets [String-No.] + [3-digit serial number] as the file name. Type the character string in the text box below the drop-down list (maximum 63 single-byte characters).
[String]	Enters a character string when [String-No.] is selected for [Format] (maximum 63 single-byte characters).
Send data	Selects to automatically send measured data to [Spectra Analysis] program after measurement.
[To Spectra Analysis]	Automatically sends measured data to the [Spectra Analysis] program after measurement.
Print	Selects to automatically print data after measurement.
[Print data after measurement]	Automatically prints data after measurement.
[Template]	Displays the drive and file name of a saved template file.
<Browse...>	Selects the drive and file name of a saved template file.

9. [Data Monitor] program reference

The [Data Monitor] program is used to provide an enlarged display of the photometric values when the CD spectrometer is being tested or calibrated. This chapter describes specific measurement parameters for the [Data Monitor] program.
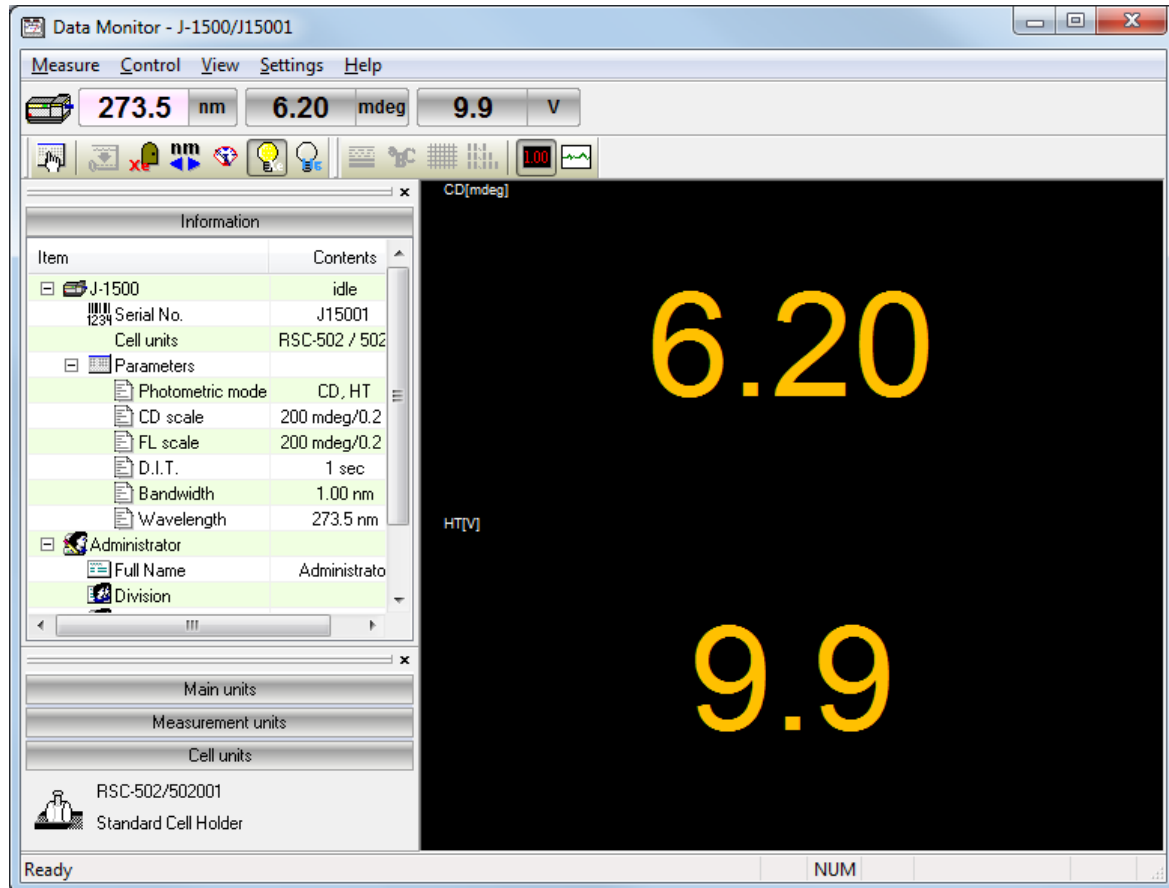
Figure 9.1 [Data Monitor] digital-mode display
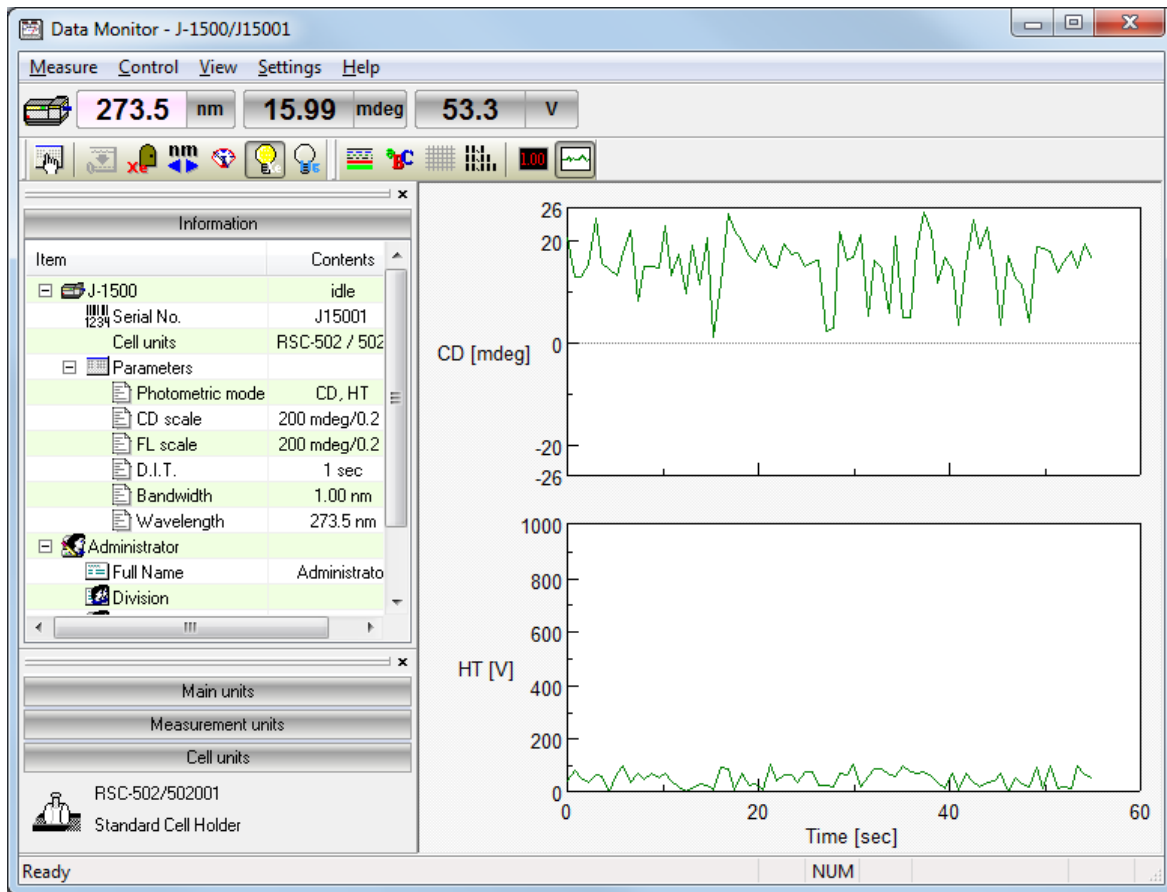
Figure 9.2 [Data Monitor] graph-mode display

9.1 [Parameters…]

Specifies the measurement parameters.

<OK>	Applies the changes to the [Parameters] settings and closes the dialog box.
<Cancel>	Closes the dialog box without applying any changes to the [Parameters] settings.

Note: This operation can also be performed by clicking the tool button [🖰] *[Parameters].*

9.1.1 [Parameters]
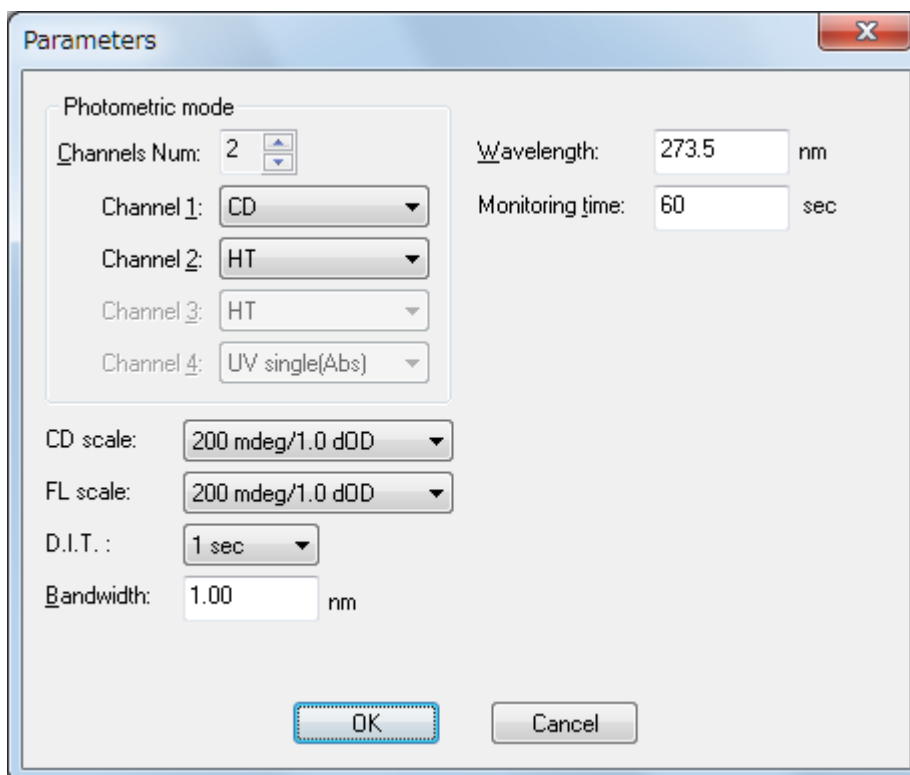
Figure 9.3 [Parameters] dialog box

Photometric mode	Selects the desired measurement parameters for the photometric mode.
[Channels Num]	Click the arrow (▼ or ▲) and select [Channels Num:] to display in the time-course data display field. Setting range: 1 to 4
[Channel *n*]	Selects the photometric mode for each channel. Click the drop-down list to select the photometric mode.
[CD scale]	Selects the CD/LD scale range for the detector in the transmission configuration. [20 mdeg/0.05 dOD]: High sensitivity mode. Available when the CD range is within ±20 mdeg and the LD range is within ±0.05 dOD. [200 mdeg/1.0 dOD]: Standard sensitivity mode. Available when the CD range is within ±200 mdeg and the LD range is within ±1.0 dOD. [2000 mdeg/1.0 dOD]: Wide range mode. Available when the CD range is within ±2000 mdeg and the LD range is within ±1.0 dOD. [10000 mdeg/1.0 dOD]: Maximum range mode. Available when the CD range is within ±10000 mdeg and the LD range is within ±1.0 dOD.
[FL scale]	Selects the FDCD/FDLD scale range for the C detector in the

	fluorescence configuration.
	[20 mdeg/0.05 dOD]: High sensitivity mode. Available when the FDCD range is within ±20 mdeg and the FDLD range is within ±0.05 dOD.
	[200 mdeg/1.0 dOD]: Standard sensitivity mode. Available when the FDCD range is within ±200 mdeg and the FDLD range is within ±1.0 dOD.
	[2000 mdeg/1.0 dOD]: Wide range mode. Available when the FDCD range is within ±2000 mdeg and the FDLD range is within ±1.0 dOD.
	[10000 mdeg/1.0 dOD]: Maximum range mode. Available when the FDCD range is within ±10000 mdeg and the FDLD range is within ±1.0 dOD.
[D.I.T.]	Selects the data acquisition time (integration time) per point. J-1100: 5 msec to 8 sec J-1500: 0.1 msec to 30 sec
[Bandwidth]	Selects the spectral bandwidth. J-1100: 1 nm (fixed) J-1500: 0.01 nm to 16.00 nm
[Wavelength]	Specifies the measurement start wavelength. J-1100: 180 to 600 nm J-1500: 163 to 1600 nm
[Monitoring time]	Specifies the monitoring time when graph mode is selected. Input range: 10 to 30000 sec

10. Appendix
10.1 Setting the Measurement Parameters

The parameters selected can seriously affect measurement results. The following summarizes how to select parameters.

10.1.1 Measurement Wavelength Range

Most CD spectrum peaks appear in a specific wavelength region (short wavelength region as in the case of ultraviolet-visible absorption spectra for most organic compounds). If the optically active absorption band position for the sample is known, take measurements beginning at a wavelength of 50 to 100 nm before the leading edge of the spectrum and ending at the trailing edge of the spectrum where it converges at zero, although this method varies slightly depending on the width and shape of the spectrum.

10.1.2 Data Acquisition Interval (Resolution)
10.1.2.1 Spectra measurement

Usually, a value of about 0.2 nm is sufficient. However, if the scanning mode is set to [Step], approximately 1 nm is more appropriate. Make the resolution coarse if the spectrum peaks are broad and fine if they are sharp.

10.1.2.2 Time-course measurement

Make the resolution fine if rapid changes with time are expected.

10.1.3 Scanning Speed

The scanning speed depends on the D. I. T. Under normal conditions, set the scanning speed at 20 to 100 nm/min and D. I. T. at 0.25 to 2 sec. Table 8.1 shows suggested D.I.T. values for different scanning speeds.

Table 10.1 D.I.T. values for different scanning speeds

Scanning speed (nm/min)	D.I.T. (recommended)	Upper limit
10000	1.0 to 2.0 msec	32.0 msec
5000	2.0 to 4.0 msec	64.0 msec
2000	4.0 to 8.0 msec	0.25 sec
1000	32.0 msec to 0.125 sec	0.5 sec
500	64.0 msec to 0.25 sec	1.0 sec
200	0.125 to 0.5 sec	2.0 sec
100	0.25 to 1.0 sec	4.0 sec
50	0.5 to 2.0 sec	8.0 sec
20	1.0 to 2.0 sec	16.0 sec
10	2.0 to 4.0 sec	16.0 sec
5	2.0 to 8.0 sec	16.0 sec
2	4.0 to 16.0 sec	16.0 sec
1	8.0 to 16.0 sec	16.0 sec

10.1.4 Number of Accumulations

The following relationship exists between the signal-to-noise ratio and the number of accumulations: S/N $\propto \sqrt{}$*(Number of accumulations).*

Increasing the number of accumulations improves the signal-to-noise ratio for a spectrum. Determine the appropriate number of accumulations based on the spectrum (sample) condition and the overall measurement time (increasing the number of accumulations prolongs the measurement time).

If the sensitivity is lower than Standard, a single accumulation will suffice. Table 10.2 shows the suggested number of accumulations when a sample with an absorbance of 1 or less is measured with a D.I.T. of 2 sec.

Table 10.2 No. of accumulations and sensitivity (D.I.T. 2 sec)

Sensitivity	Number of accumulations
High	4 to 50
Standard, Low	1

Note: *For time-course measurements, set the number of accumulations to 1. Cumulative measurement can be used in stopped flow measurement (see the instruction manual for the stopped flow unit).*

10.1.5 Response (D.I.T.)
10.1.5.1 Spectra measurement

The following relationship exists between D.I.T. and the signal-to-noise ratio:

S/N $\propto \sqrt{}$*(Response).*

The signal-to-noise ratio for a spectrum measured for 4 seconds is twice that for a spectrum measured for 1 second.

The spectral value at any given point in time is the average of values sampled before and after that time (D.I.T./2). Therefore, increasing D.I.T. leads to a greater effect of previous data on the current data. Do not increase D.I.T. excessively if scanning is carried out at high speed or if the resolution is low.

Table 10.3 shows suggested D.I.T. values for obtaining a spectrum with a high signal-to-noise ratio at a desired sensitivity. If the sensitivity is set at 10 mdeg and D. I. T. is set at 1 to 2 sec to improve the signal-to-noise ratio, increasing the number of accumulations is very effective because the spectrum is simultaneously averaged.

Table 10.3 D.I.T. values for obtaining high signal-to-noise ratio

CD scale (mdeg)	D.I.T. (sec)
10	0.5 to 16.0
200	0.125 to 0.5
2000	0.025 to 0.064

Note: *A D.I.T. of 0.5 to 125 msec should be selected for high speed measurement using a stopped flow unit.*

The above table also applies to a step scan. In this case, the measurement time is the sum of the wavelength stepping time and the data acquisition time at each step. If the D.I.T. is on the order of seconds, the number of accumulations will dominate the measurement time and the measurement time will be almost proportional to D.I.T. For a total wavelength measurement range of W (nm) and a data interval of Step (nm), the following relation holds between the total integration time and D.I.T.

Total Integration Time = (W/Step + 1) × D.I.T.

(W/Step + 1): Number of data points

10.1.5.2   Time-course measurement

For time-course measurement, select a D.I.T. that is appropriate given the decay half-life of the CD signal due to a reaction. For normal reactions, set it to 1/10 of the decay half-life of the CD signal or smaller. For example, if the decay half-life is 20 msec, a D.I.T. of 0.5 to 2 msec is appropriate. If the decay is very slow, select a D.I.T. of 1 to 16 sec, taking into account the rate of change of the signal and the signal-to-noise ratio. When used as a monitor for HPLC, a D.I.T. of about 1 sec is suitable.

10.1.6   Bandwidth and slit width

In most cases, set the measurement bandwidth to 1.0 nm. Decrease it when measuring a sharp spectrum such as a MCD (magnetic circular dichroism) spectrum, or increase when performing measurements using a micro cell, when the signal-to-noise ratio is low. When a longer wavelength detector (400 to 1100 nm) is used, increase the bandwidth and set the slit width to about 60 μm to prevent the photomultiplier voltage (HT) from rising abnormally. However, ensure that the HT voltage does not become lower than 170 V.

Note 1: If the slit width is increased until the HT voltage drops below 170 V, the photomultiplier may be damaged.

Note 2: Most organic substances emit fluorescence. Therefore, measuring a sample having an absorbance of 2 or more at a bandwidth of 2 nm or more may distort the spectrum. Also, photolysis of a sample can occur in the ultraviolet region. If the sample is susceptible to photolysis, reduce the bandwidth to 0.5 nm or less.