

RSM Measurement Part

Contents

1. How to set Part conditions	1
1.1 Setting conditions	1
2. Measurement sequence.....	7

1. How to set Part conditions

In this chapter, how to set the **RSM Measurement** Part conditions is described.

1.1 Setting conditions

Set the basic conditions in the **RSM Measurement** dialog box.

RSM Measurement

Save measurement data

File name: C:\Documents and Settings\SmartLab\My Documents\RigakuTest.ras

Sample name:

Memo:

Detector setting: Set RSM origin

Type: Scintillation counter

Measurement mode:

- Omega step / 2-theta/omega scan
- 2-theta/omega step / Omega scan
- Omega step / 2-theta scan

Analyzer setting:

- Use analyzer after alignment
- Use analyzer without alignment
- Do not use analyzer

Measurement conditions:

Step axis	Range	Start (deg)	Stop (deg)	Step (deg)
Omega	Relative	0.0000	0.0000	0.0010

Scan axis	Mode	Range	Start (deg)	Stop (deg)	Step (deg)	Speed (deg/min)	Attenuator
2-Theta/Omega	Continuous	Absolute	0.0000	0.0000	0.0012	0.0010	Current

Calculated scan duration: 00:00:00


Buttons: Execute, Import..., Export..., OK, Cancel

Fig. 1.1.1 RSM Measurement dialog box


- File name** Enter the name of the file to save the measurement data in.
- Sample name** Enter the sample name (optional). The sample name entered here will be saved in the measurement data file.
- Memo** Enter the memo (optional). The memo entered here will be saved in the measurement data file.

- Detector setting** Select the detector to be used for the reciprocal space map measurement from **Scintillation counter** or **D/teX Ultra**.

- Measurement mode** Select the measurement mode of reciprocal space mapping from **Omega step / 2-theta/omega scan**, **2-theta/omega step / Omega scan**, or **Omega step / 2-theta scan**.

 **Tip:** If **Scintillation counter** is selected from the **Type** box under the **Detector setting** section, **Omega step / 2-theta/omega scan** or **2-theta/omega step / Omega scan** can be selected as the measurement mode. If **D/teX Ultra** is selected, only **Omega step / 2-theta scan** can be selected as the measurement mode.

- Analyzer setting** Select whether or not the 2-bounce analyzer is used. Select from **Use analyzer after alignment**, **Use analyzer without alignment**, or **Do not use analyzer**.

 **CAUTION:** The 2-bounce analyzer is an option.



Tip: If **D/teX Ultra** is selected from the **Type** box under the **Detector setting** section, the condition for **Analyzer setting** cannot be selected.

Set RSM origin

Check the **Set RSM origin** box to drive each axis to the position entered here before the RSM (reciprocal space mapping) measurement.

2-Theta

Enter the position to drive the 2-theta axis to in deg.

Omega

Enter the position to drive the omega axis to in deg.

Chi

Enter the position to drive the chi axis to in deg.

Phi

Enter the position to drive the phi axis to in deg.

Read current positions

Sets the current position of each axis in each box.

Step axis	Range	Start (deg)	Stop (deg)	Step (deg)
Omega	Relative	-1.0000	1.0000	0.0100

Range

Select the measurement range specification method from **Absolute** or **Relative**.

Start (deg)

When **Absolute** is selected as the measurement range specification method, enter the absolute start angle of the step axis. When **Relative** is selected, enter the relative distance of the start angle from the RSM origin.

Stop (deg)

When **Absolute** is selected as the measurement range specification method, enter the absolute stop angle of the step axis. When **Relative** is selected, enter the relative distance of the stop angle from the RSM origin.

Step (deg)

Enter the step width of the step axis.

Scan axis	Mode	Range	Start (deg)	Stop (deg)	Step (deg)	Speed (deg/min)	Attenuator
2-Theta/Omega	Continuous	Relative	-1.0000	1.0000	0.0100	1.0000	Current

- Mode** Select the scan mode from **Continuous** or **Step**.
- Range** Select the scan range specification method from **Absolute** or **Relative**.
- Start (deg)** When **Absolute** is selected as the scan range specification method, enter the absolute start angle of the scan axis. When **Relative** is selected, enter the relative distance of the start angle from the RSM origin.
- Stop (deg)** When **Absolute** is selected as the scan range specification method, enter the absolute stop angle of the scan axis. When **Relative** is selected, enter the relative distance of the stop angle from the RSM origin.
- Step (deg)** Enter the step width of the scan.
- Speed (deg/min) / Duration time (sec)** When **Continuous** is selected as the scan mode, enter the scan speed. When **Step** is selected as the scan mode, enter the duration time per measurement point.
- Attenuator** Select the attenuator to be used for the measurement from **Open**, **1/70**, **1/1000**, **1/10000**, **Auto**, or **Current**.



Tip: If **Auto** is selected, an automatic attenuator scan is performed while the attenuator is automatically switched based on intensity.

If **Current** is selected, the attenuator set before this Part is executed will be used.

2. Measurement sequence

The RSM measurement is performed automatically. However, the parallel slit, 2-bounce analyzer, etc. must be installed (or removed) manually as instructed by messages displayed on the screen.

Described below is the measurement sequence when **Omega step / 2-theta/omega scan** is selected for **Measurement mode** and **Use analyzer after alignment** is selected for **Analyzer setting**.

- (1) Align the analyzer crystal using the direct x-ray beam.
Drive the theta_s and theta_d axes to 0.0°. Remove the receiving optical device adaptor and install the 2-bounce analyzer as instructed by the message.
- (2) Set the RS2 width to 10 mm, and drive the Zd axis to -5.5 mm.
- (3) Drive the Z axis to -4.0 mm.

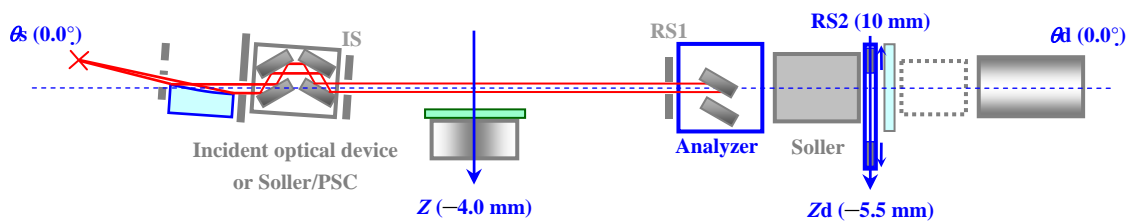


Fig. 2.1 Installation of 2-bounce analyzer



CAUTION: The 2-bounce analyzer is an option.

- (4) Scan the omega_a axis, then drive the omega_a axis to the peak position.

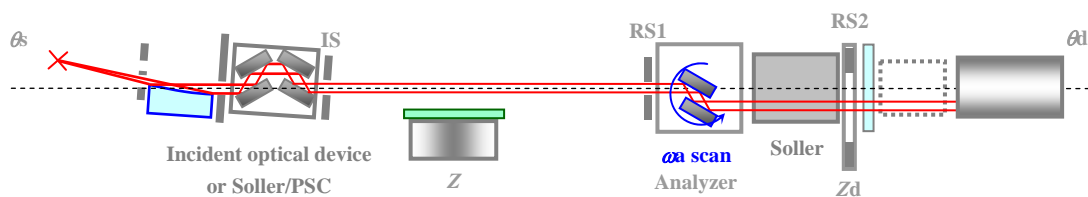


Fig. 2.2 Alignment based on omega_a scan

- (5) Set the RS2 width to 1 mm.
Scan the Zd axis, and drive the Zd axis to the peak position.

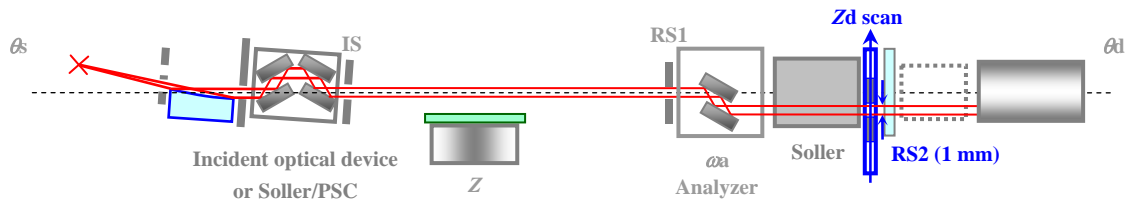


Fig. 2.3 Alignment based on Zd scan

- (6) Drive the Z axis to the position adjusted by sample alignment, and the 2-theta, omega, chi, and phi axes to the positions of the substrate reflection.
- (7) Perform the axis alignment based on the positions of the substrate reflection (chi step, omega scan).

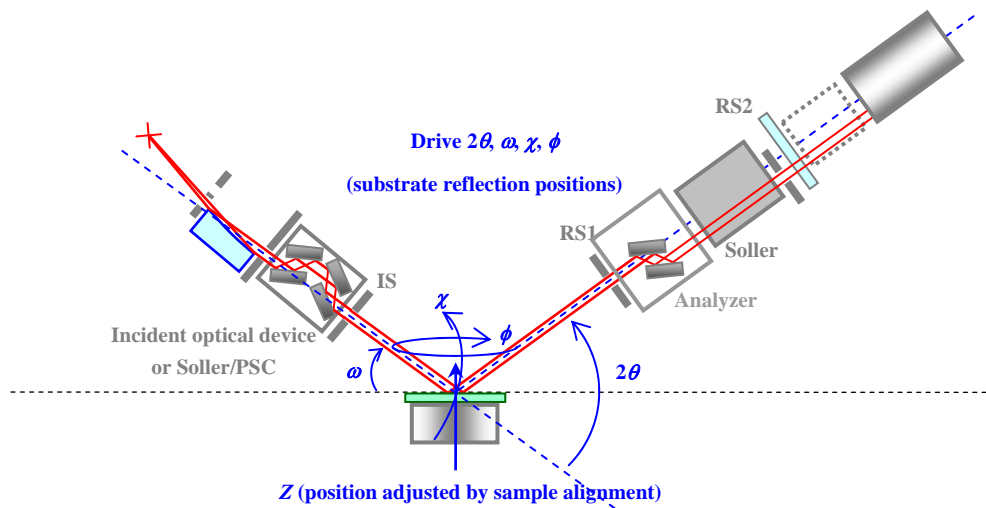


Fig. 2.4 Driving the axes to the substrate reflection positions and axis alignment

- (8) Make the RSM measurement (omega step, 2-theta/omega scan).

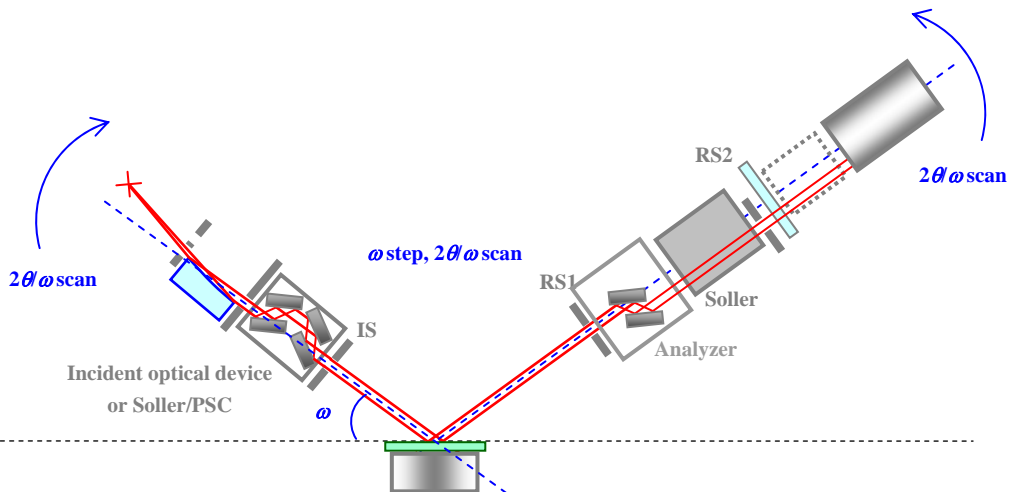


Fig. 2.5 RSM measurement