Vacuum ultraviolet (VUV) spectroscopy: SOXMOS

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1. Purpose / Application

Measurement of temporal evolution of vacuum ultraviolet (VUV) and soft X-ray (SXR) emission spectrum and impurity line intensities

2. Name of analysis (Kaiseki) data / module of MyView2

'soxmos': Uncalibrated (rough) wavelength vs. counts data for channels 1 and 2

'soxmos1': Calibrated wavelength vs. counts data for channel 1

'soxmos2': Calibrated wavelength vs. counts data for channel 2

3. General Description (Port, field line, time resolution, spatial resolution, number of channels, etc.)

3.1 Features

- 2 m Rowland circle mounting

- 88 degree grazing incidence

- Dual multichannel plate (MCP) detectors

- 600 g/mm or 133.6 g/mm interchangeable gratings

- Overall wavelength coverage : 2–130 nm

- Spectral resolution : ~0.01 nm (600 g/mm grating) or ~0.06 nm (133.6 g/mm grating)

- Minimum readout time for a full spectral portion : 16 ms

3.2 Apparatus

- An entrance slit, a grating, and two microchannel plates are arranged along a Rowland circle (see Fig. 1).

- Spectra on the microchannel plates are converted to visible images via phosphor screen, and then transmitted and bundled via a fiber optic conduit to a 2048 channel photodiode array detector (see Fig. 2).

- Two different spectral regions are simultaneously measured.

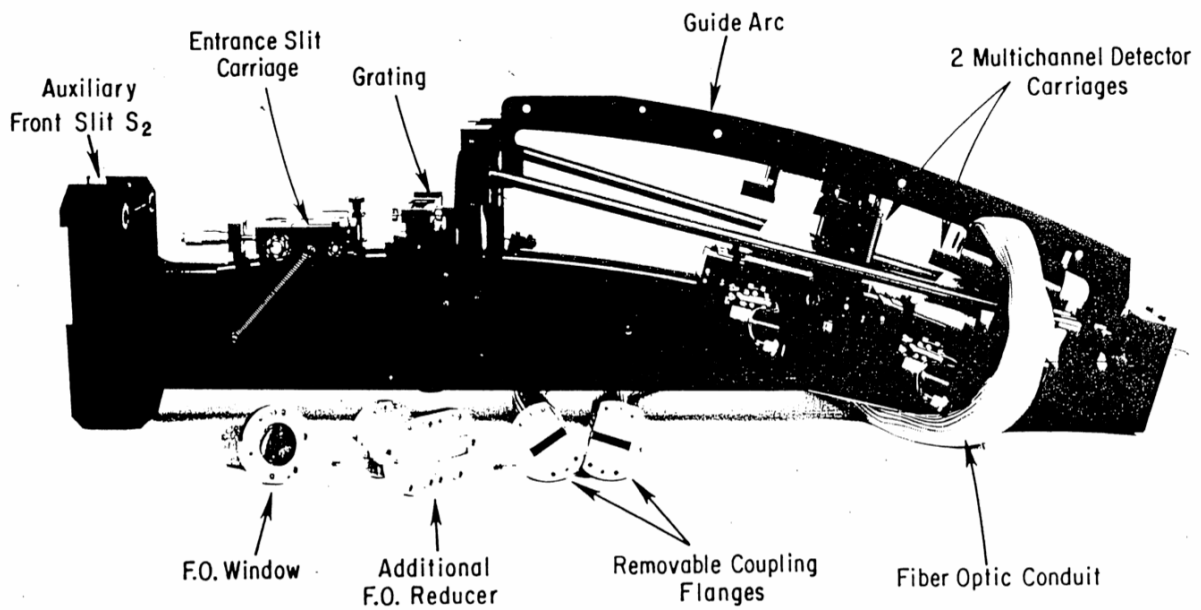- Groove density of the grating is selectable from 600 and 133.6 g/mm.

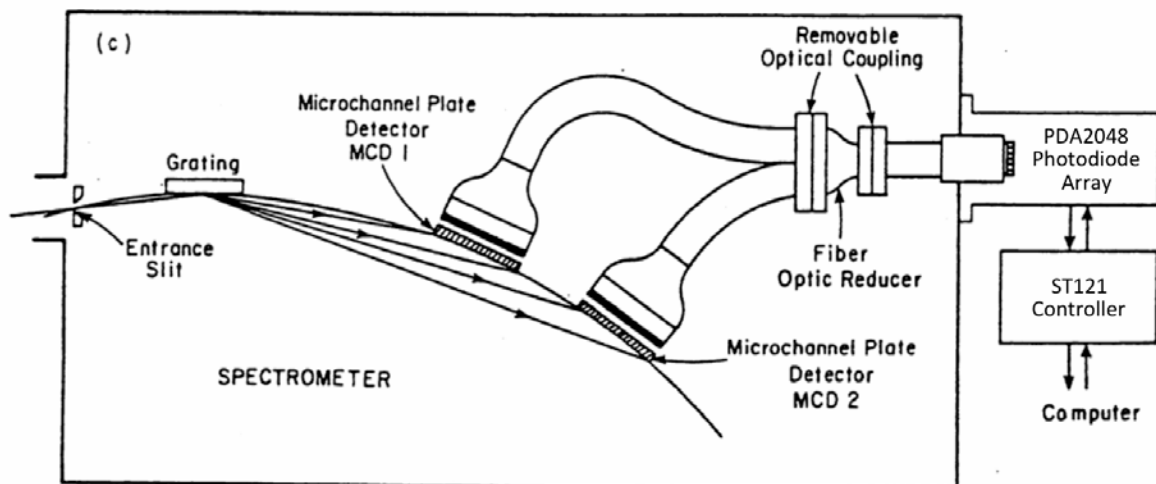*Fig. 1. Inside view of the SOXMOS spectrometer body.*

Fig. 2. Schematic view of the SOXMOS spectrometer system.

3.3 Arrangement

- The device has been installed at 7O port (AL01-06).

- VUV spectra are measured along a line of sight in a horizontally elongated cross section.

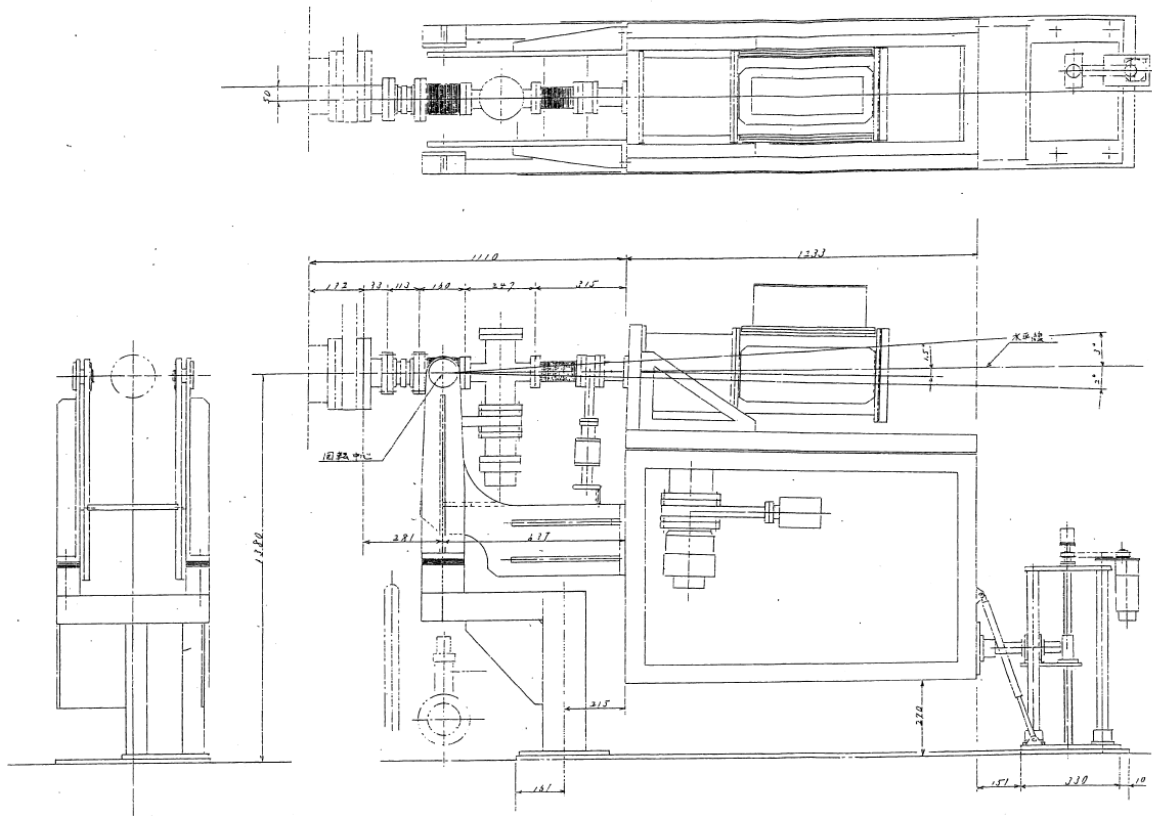- Angle of the line of sight can be titled from -2 degree to 2 degree.

Fig. 3. Arrangement of the SOXMOS spectrometer.

4. Requirement in use

The required wavelength range should be notified in advance.

5. Description of analysis (Kaiseki) data / module of MyView2

'soxmos': Uncalibrated (rough) wavelength vs. counts data for channels 1 and 2

'soxmos1': Calibrated wavelength vs. counts data for channel 1

'soxmos2': Calibrated wavelength vs. counts data for channel 2

6. Others

Wavelength calibration is required every time the wavelength range changes.

References

[1] J. L. Schwob, A. W. Wouters, S. Suckewer, and M. Finkenthal, Rev. Sci. Instrum. 58 (1987) 1601.