

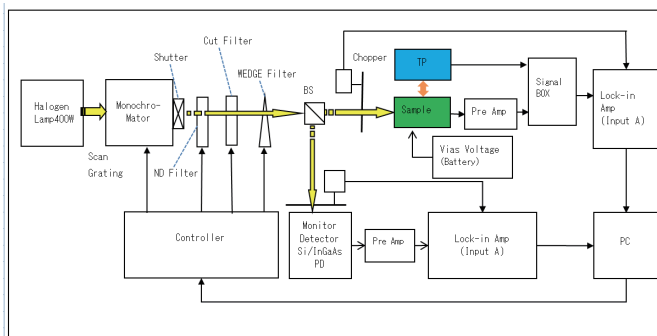
SGA-25 Subgap Optical Absorption Measurement System



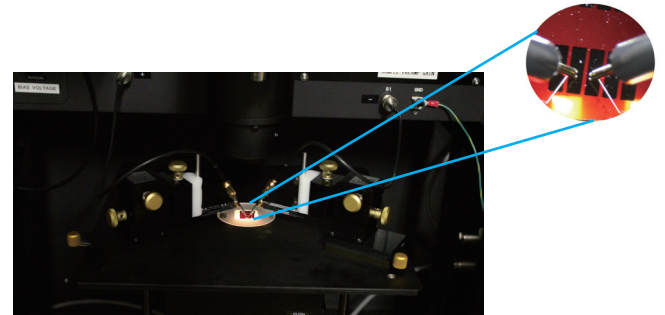
With using the constant photocurrent method (CPM method), this system can measure the weak defect light absorption of a semiconductor thin film that cannot be detected by general transmission spectroscopy. The system is ideal for evaluating the defect density and defect level of amorphous silicon and oxide semiconductors. The measurement principle is to irradiate the sample with monochromatic light and control the light intensity so that the photocurrent is constant at each wavelength. The irradiation light intensity value is monitored by the built-in monitor detector. The absorption coefficient is calculated from the irradiation light intensity value.

- An ideal instrument to evaluate defect level of oxide semiconductors such as In-Ga-Zn-O (IGZO)
- For measurement range, two systems are available ; one to cover the range from 500~2100nm (0.59 ~ 2.48eV) and another to cover the range from 300 ~ 1200nm (1.03 ~ 4.13eV)

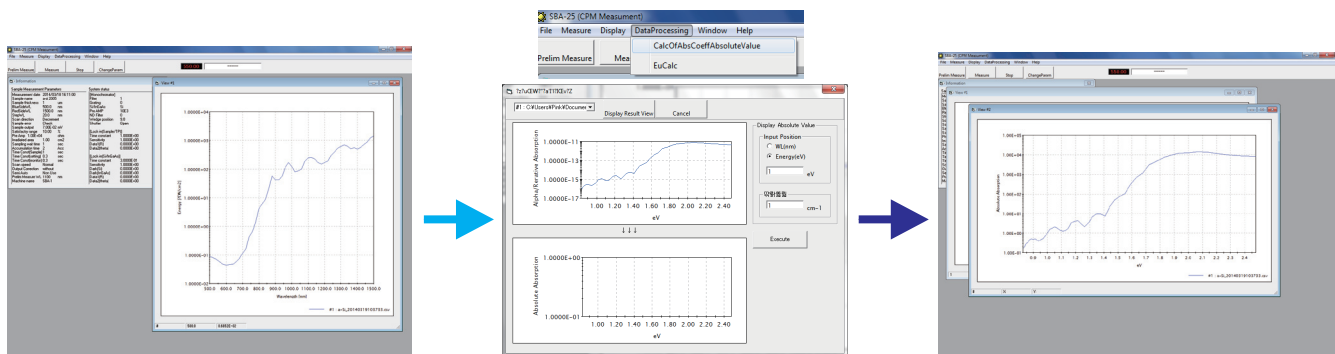
Diagram of measurement procedure



Sample compartment and sample contact



Measurement data of amorphous silicon (example)



Display of the measurement data

After measurement, the graph is displayed to calculate absolute absorption coefficient from the [absolute absorption coefficient] mode

Display of spectrum of absolute absorption coefficient



Specifications

Measurement method	Constant photocurrent method (CPM method)
Wavelength range (Halogen type)	500 ~ 2100nm (0.59 ~ 2.48eV)
Wavelength range (Xenon type)	300 ~ 1200nm (1.03 ~ 4.13eV)
Irradiation area	Exchange of the lens for 10 x 10mm (Entire irradiation area 14x14mm) and 6x6mm
Non uniformity in irradiation area	Within ±10%
Light intensity stability	Within ±5%
Variable range of irradiation intensity	100nW/cm ² ~ 5mW/cm ² (at 550nm)
Wavelength purity	Approx. 24nm (with 4mm slit width of monochromator)
Wavelength accuracy	±0.2nm
ND filter	5 pcs (10% 1% 0.1% 0.01% 0.001%)
Exit light	DC or chopped light, manually switching
Variable chopper	Variable frequency range DC/0.1 ~ 100Hz
Sample	Size 10 x 10mm (For other size, optional sample stage and etc. can be offered)
Sample current measurement method	Connect a current amplifier to sample and measure output voltage with a lock-in amplifier
Minimum detection current	100fA
Absorption coefficient measure range	6 digits
Bias power supply	1.5V, 3V, 9V, 18V, 27V with the use of dry batteris
Sample observation	Monocle, camera, monitor display (Field of vies 2.0 x 1.5 ~ 16 x 12mm)

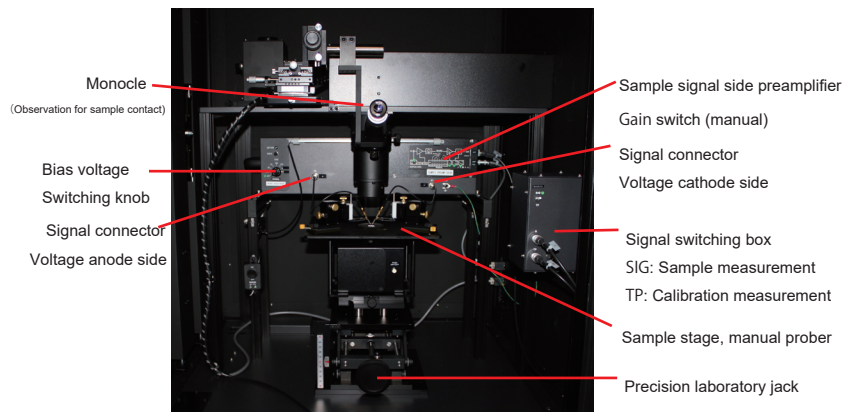


Configurations

- Halogen lamp 400W (the system is for Halogen type)
- Halogen lamp 400W PS(the system is for Halogen type)
- Optical system for condensing light source
- Monochromator
- Grating , 600 lines/mm, 300nm blaze
- Grating , 600 lines/mm, 1600nm blaze
- Exit optical light condensing unit(Auto variable and continuous ND filter)
- Variable frequency chopper, DC/0.1 ~ 100Hz
- Different type of Higher-order cut filter
- Sample compartment
- Lockin Amp for light intensity monitor
- Lockin Amp for sample current measurement
- Si photo diode detector
- TP unit
- Sample stage, manual prober, Precision laboratory jack
- Bias power supply
- Monocle, camera, monitor display
- Software
- Interface unit
- Desktop PC
- Instruction Manual



Inside of sample compartment



Dimensions

- Operation : AC100V ±10V 50/60Hz 10A (220V or other voltage is possible with the dedicated transformer for oversea operation)
- Main unit : Approx. W1850×D700×H1400mm
- Weight : Approx. 400Kg

● Specifications and appearance are subject to change without prior notice.

< SGA-25-1906040N >



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