UNISOKU
TII Group

Laser Flash Photolysis System

TSP-1000 / TSP-1000M

TSP-1000 is a laser flash photolysis system for use in the measurement of transient absorbance. It is in wide use for the analysis of the elementary processes of photochemical reactions. With a nanosecond pulsed laser as the exciting light source, this system makes it possible to measure transient UV-VIS absorption in a broad range of nanosecond to milisecond.

Data are aquired by the combination of a photomultiplier detector and a digital osciloscope in the single-wavelength monochromator system, and by the combination of a photodiode array detector and a high-speed AD converter in the multi-channel spectrophotometer system. In both systems, time resolution up to 10 nsec is available.

Laser Flash Photolysis System

TSP-1000 / TSP-1000M

System Components

		TSP-1000 (M)-01	TSP-1000 (M)-02R	TSP-1000 (M)-03R
Exciting light Source SLI type	1	○ (–)	○ (–)	○ (–)
Exciting light Source ML II type	1	(–) ○	(–) ○	(–) ○
Monitoring light Source (150W Xe lamp)	1	○	○	○
Light Guide for light path	1	○	○	○
Sample cell holder	1	○	○	○
Data Processor	1	○	○	○
Spectrometer MD200 (-01) *1	1	○	–	–
Spectrometer MD308 (-03) *2	1	–	○	○
Monochromatic Detector	1	○	–	○
Multi-channel Detector	1	–	○	○

*1 Use for Single-wavelength monochromator system *2 Use for Multi-channel spectrophotometer system

Standard Systems

Single-wavelength Monochromator System
TSP-1000(M)-01R

Multi-channel Spectrophotometer System
TSP-1000(M)-02R

Single-wavelength/Multi-channel Spectrophotometer System
TSP-1000(M)-03R

Specifications

Exciting Light Source (Pulsed YAG Laser)

Pulse Width	4 ~ 6 nsec
Energy (TSP-1000)	200mJ@532nm, 60mJ@355nm
Energy (TSP-1000M)	25mJ@532nm, 8mJ@355nm
Repetition Rate	10Hz (single pulse available)

Monochromatic Detector

Lamp	150W Xe arc lamp of high stability
Lamp House	Air-cooling type
Light Intensity Adjustment	Iris function available with a space to insert an otical fiber

Light Guide for Light Path

Material	Fiber optics made of quartz (transmittable in the range of 200nm ~ 1000nm)
Length	1m

Sample Cell Holder

Temperature Range	5℃ ~ 60℃
Temperature Control	By a bath circulator
Cell	10mm-square quartz cell (transparent in 4 sides)
Spaces for Optical Filters	At the exciting side and the detection side

Data Processor

OS	Windows 95/98/Me/2000/XP
Control Interface	DIO (PCI), GPIB (PCI)
Software	Averaging, Overlaying, Converting of wavelength axis and time axis, Non-linear least squares fitting, Data storing in text format

Single-Wavelength Monochromator System

Spectrometer MD200

Optical Alignment	Czerny-Turner grating
Focal Distance	200mm
Speed	F/3.5
Linear Dispersion	8.5nm/mm
Slit Width	0.1mm, 0.2mm, 0.5mm

Monochromatic Detector

Detector	Photomultiplier tube
Response	5nsec or less
High-voltage Power Supply	0 ~ 1100 V adjustable
Control Circuit	Wavelength scanning circuit
Digital Oscilloscope	High Voltage feedback circuit Sampling rate: 1.25GS/sec max Vertical sensitivity: 1mV/div ~ 10V/div Time axis range: 40nsec/div ~ 10sec/div

Multi-Channel Spectrophotometer System

Spectrometer MD308

Optical Alignment	Czerny-Turner grating
Gratings	3 different gratings automatically changeable
Focal Length	300mm
Speed	F/4
Linear Dispersion	5.4nm/mm (when using the 600g/mm grating)
Slit Width	10mm ~ 3mm continuously changeable

Multi-Channel Detector

Detector	Photodiode array 1024ch with a gated image intensifier
Time Resolution	5nsec ~ 10μsec
Image Intensifier Gain	Adjustable
Synchronization Control	Pulse generator with GPIB interface
Wavelength Range of Simultaneous Measurement	100nm, 200nm, 400nm (400nm when using MD200)

Optional Accessories

Exciting Light Source 266nm
Dye Laser (420nm ~ 650nm)
OPO Wavelength-Changeable Laser
Flash Lamp as a monitoring light Source
Low-Temperature Cell Chamber (-80℃ ~ 100℃)
Stopped-Flow Mixer (for flow flash measurement)
Bath Circulator
Optical Filters

*Other optional accessoriss are available upon request.

Specifications and appearances are subject to change without prior notice

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