

ATX2000 series

Low Noise Absorbance Measurement System

Spectral Measurement Solutions

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1. Description:

ATX2000 is a high-performance low-noise absorbance and fluorescence measurement system developed by Optosky. The system is completely independently developed by Optosky Photonics Ltd. Among them, the low-noise optical fiber spectrometer adopts optimized optical and electronic design, which greatly reduces the noise of the sensor, obtains an excellent signal-to-noise ratio (about 5 times higher than that of similar competitors), and improves the measurement reliability of ATX2000, the measurement results do not change with the ambient temperature.

The ATX2000 can be easily configured to measure and study various spectra such as reflection, transmission, absorption, and fluorescence.

The ATX2000 adopts a pulsed xenon lamp (wavelength range 190-1100nm) with a lifespan of 109 flashes, which can be used for more than 5 years without changing the light source.

ATX2000 only needs a 5V DC power supply, plus a computer, it can work, very simple and easy to use.

2. Features:

- Absorbance, fluorescence and other multi-function measurement;
- Measuring wavelength range: 190-1100nm;
- The absorbance can be as high as 3.2;
- No need to preheat, it can be used immediately after power on;
- The fluorescence filter is removable;
- Ultra-low noise CCD signal processing circuit
- Spectral Resolution: 1.6 nm
- Optical path structure: Cross C-T
- Measurement time: 2ms-130s (software can be set)
- The spectrometer controls the light source and can measure synchronously;
- Power supply: DC 5V±10% @ <2.3A
- Optical input interface: SMA905 or free space
- Data output interface: USB2.0 (High speed) or UART
- 20-pin dual-row programmable external expansion interface

3. Applications:

- Universities, research institutes and other laboratories;
- Multi-parameter online water quality analyzer;
- Micro and fast spectrophotometer;
- Spectroscopic analysis, radiometric analysis, spectrophotometric analysis
- Fluorescence Spectrometer;
- happy;
- Transmittance, absorbance detection;
- Reflectivity detection;

4. Composition Structure

ATX2000 spectral measurement system usually includes spectrometer, light source, optical fiber, sample holder, standard reference sample, and software, etc. The components of each part are as follows:

- 1) Low noise fiber optic spectrometer;
- 2) Long-life pulsed xenon lamp, broad-spectrum ultraviolet, visible and near-infrared light sources;
- 3) Spectrometer, pulse xenon lamp synchronous control circuit board;
- 4) High transmittance UV fiber;
- 5) Integrated multi-function measurement sample cell for transmission, reflection and fluorescence;
- 6) Optosky_Spectral professional spectral measurement software.

Each constituent spectral part has its spectral range. Therefore, it is necessary to select an appropriate spectral range according to the actual needs of users. For example, in order to measure the spectrum of the ultraviolet part, it is necessary to use a UV-sensitized spectrometer or an area-array back-illuminated spectrometer capable of detecting the ultraviolet band, and a broad-spectrum light source with ultraviolet radiation.

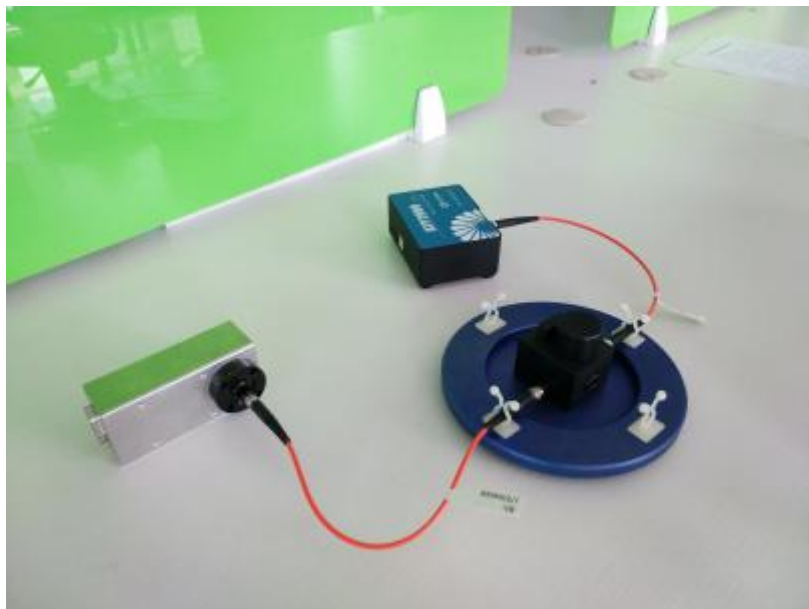


Figure 1 ATX2000 system diagram

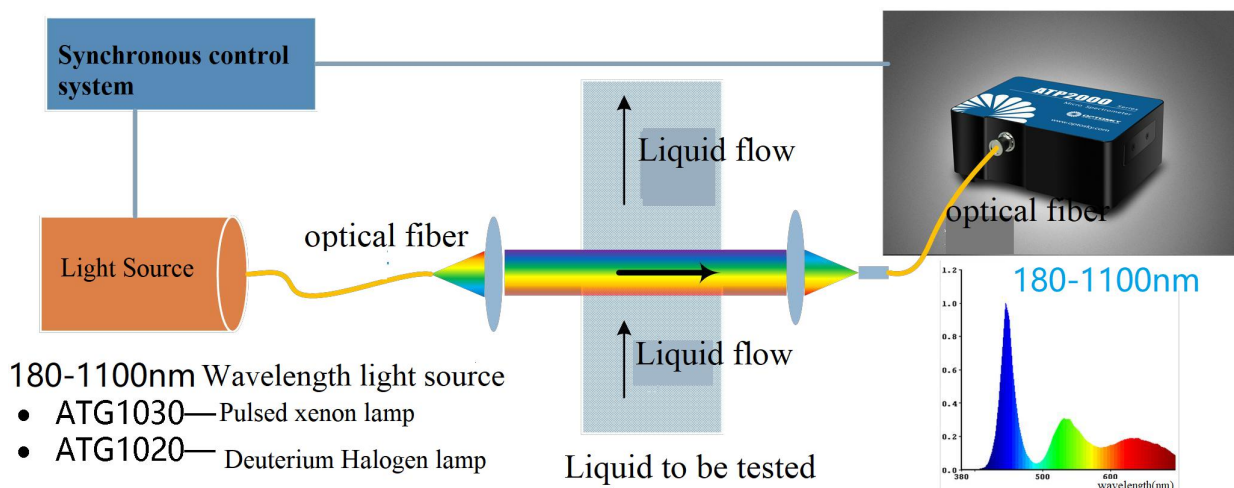


Figure 2 Schematic diagram of the transmission measurement principle of ATX2000

5. Performance parameters

ATX2000_Low Noise Absorbance Integrated Measurement Solution	
Spectral range	190-1100nm
Optical resolution	1.6nm
Absorbance measurement range	0-3.2
Incident light interface	SMA905 fiber optic interface
Fiber length	>1.5m
Measuring Optical Aperture	Ø5mm
Measuring optical path	10mm
Operating temperature	-10-45°C
Working humidity	< 90%RH
Spectrometer	
Detector Type	Low Noise Line Array Sensor
Spectral range	190-1100nm
Effective Pixels	2048
Pixel size	200 μ m × 14μm
Optical resolution	1.6nm
SNR	>2300:1
Dynamic Range	8000:1
Optical Design	f/4 cross asymmetric C-T optical path
Focal Length	40 mm for incidence / 60 mm for output
Electrical Parameters	
Integration Time	1 ms - 130 second, software programmable
Data output interface	USB 2.0
ADC bit depth	16 bit
Power Supply	DC 5V ± 10%
Working Current	<2.3A
Storage Temp	-20° C to +70° C
Operating Temp	-10° C to +45° C
Pulse Xenon Lamp	
Service Life	≥10 ⁹
Broad Spectrum	185nm-2000nm
Preheat Time	No need to warm up, start right away
Power	5 W

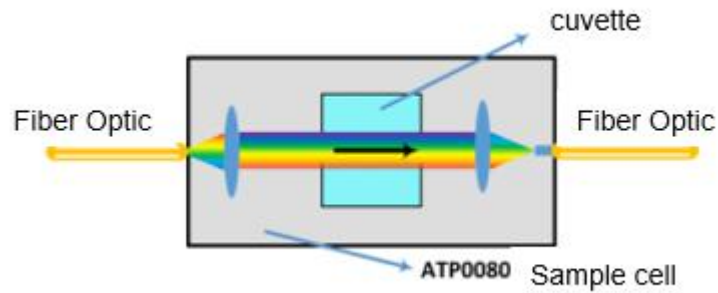
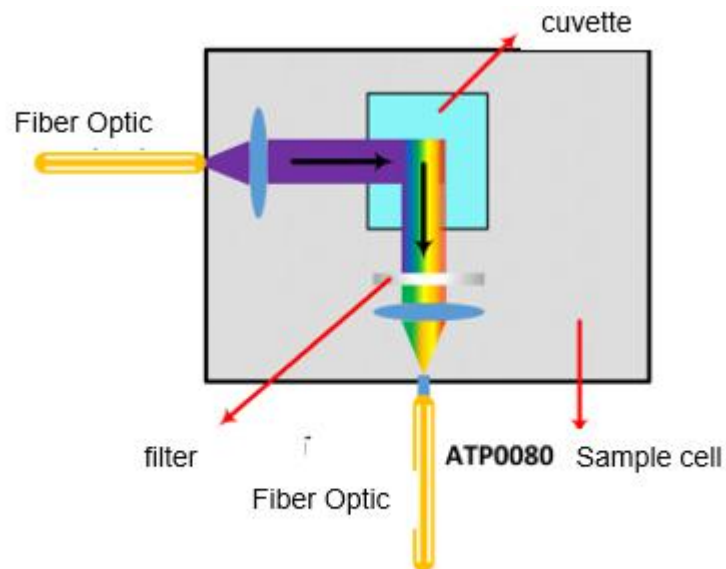
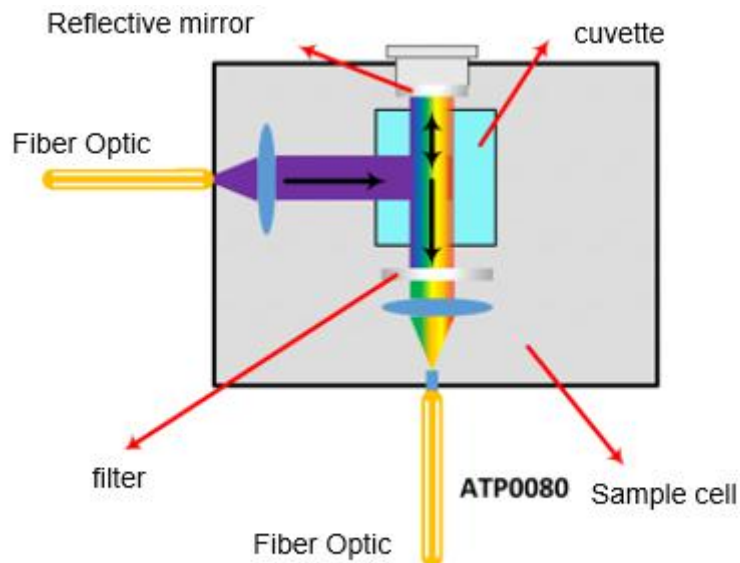


Fig 3 Transmission principle scheme



Scattering, fluorescence application

Fig 4 Fluorescence measuring mode principle scheme



Enhanced scattering, fluorescence spectra application

Fig 5 Enhanced fluorescence measurement mode principle scheme

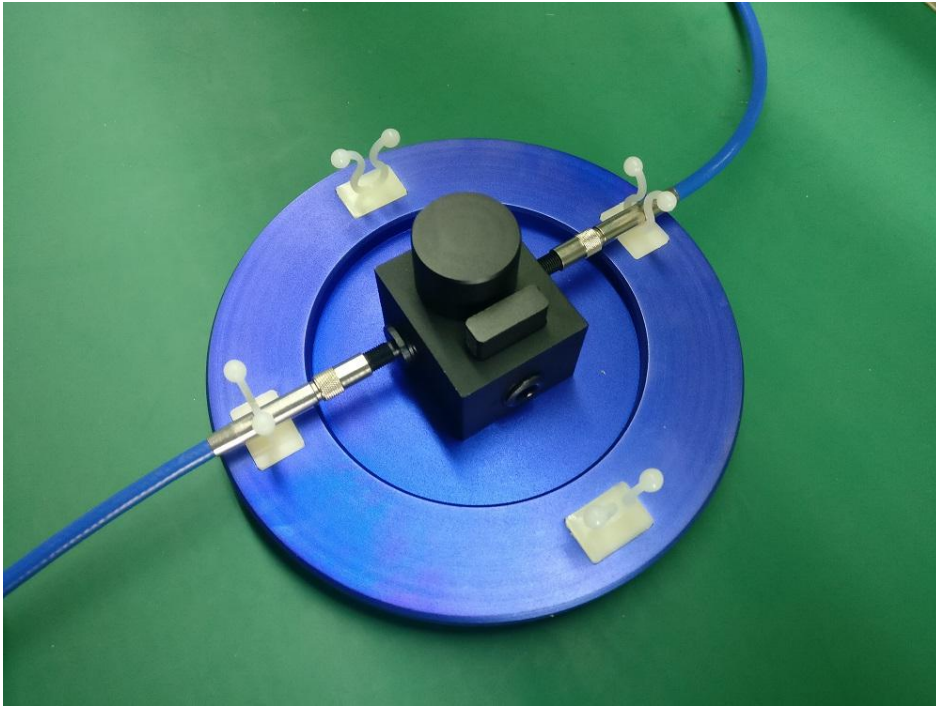


Fig 6 Transmission,reflectance and fluorescence integrated sample cell

2 Successful project

- 1) Fast UV,VIS spectrophotometer



- 2) Multi-parameters water quality analyzer



3) Small volume spectrophotometer

