

(Cooled) Ultra-thin&High resolution

M-shape C - T Micro-spectrometer

ATP3330
ATP5330

Description:

ATP3330 and ATP5330 are newly designed ultra thin, cooled, ultra high resolution miniature spectrometers developed by Optosky. ATP3330 and ATP5330 are m-type optical path structures, which have extraordinary ultra-high resolution. Cooled 2048 or 4096 pixels at the same time, it uses the linear array detector, reached the acme of the ultra high resolution, high resolution can reach <0.05 nm, suitable for all kinds of applications, high resolution and high reliability, ultra-high speed, low cost, high cost performance and other characteristics, can adapt to the online test USES a variety of environments such as micro spectrometer.

ATP3330 is uncooled, while ATP5330 USES TEC cooled at -5°C, which greatly reduces the dark current and noise , improves the dynamic range and signal-to-noise ratio, and improves the environmental adaptability of the spectrometer. ATP5330P adopts cooled back-illuminated CCD with better signal-to-noise ratio.

ATP3330 and ATP5330 can receive SMA905 fiber input light or free space light, and output the spectral data obtained through USB2.0 or UART port.

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ATP3330 only needs a 5v DC power supply or directly from the USB interface, which is very easy to integrate and use. ATP5330 requires an additional 5V power supply.

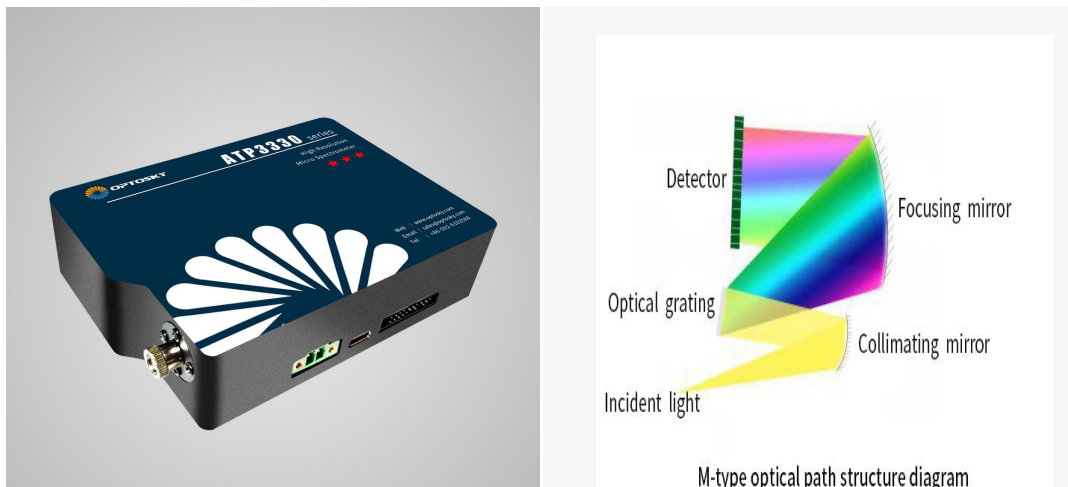
	Cooled	Pixels
ATP3330	NO	2048
ATP3334	NO	4096
ATP5330	YES, -5°C	2048
ATP5334	YES, -5°C	4096
ATP5330P	YES, -10°C, BI CMOS	2048

Feature

- M-shape, high resolution;
- Wavelength range: 200-1100 nm ;
- Resolution: 0.05~ 3 nm ;
- Optical path: M-shape C-T;
- Detector: 2048/4096 pixel;
- Cooling Temperature: -5 °C
- Integration time: 0.1ms ~ 256s;
- Power supply: DC 5V power supply;
- ADC: 16 bit;
- Output: USB Type-C;
- 20-pin expansion interface;

Application

- LIBS, Plasma luminescence detection;
- Raman detection;
- Wavelength monitoring, laser, LED and other luminous bodies
- Water quality analyzer
- LED sorting machine, color detection;
- Spectral analysis, radiation spectroscopic analysis, spectrophotometric analysis;
- Reflection and transmission spectrum detection

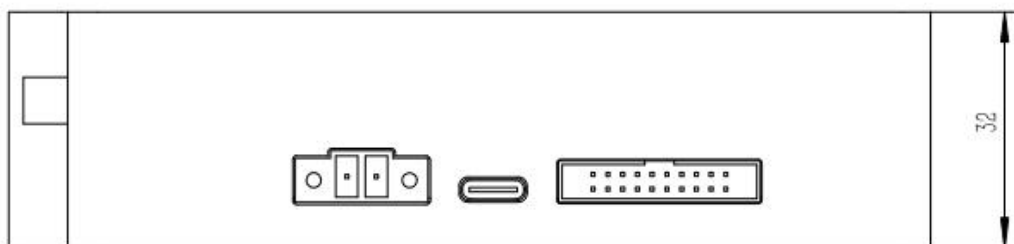
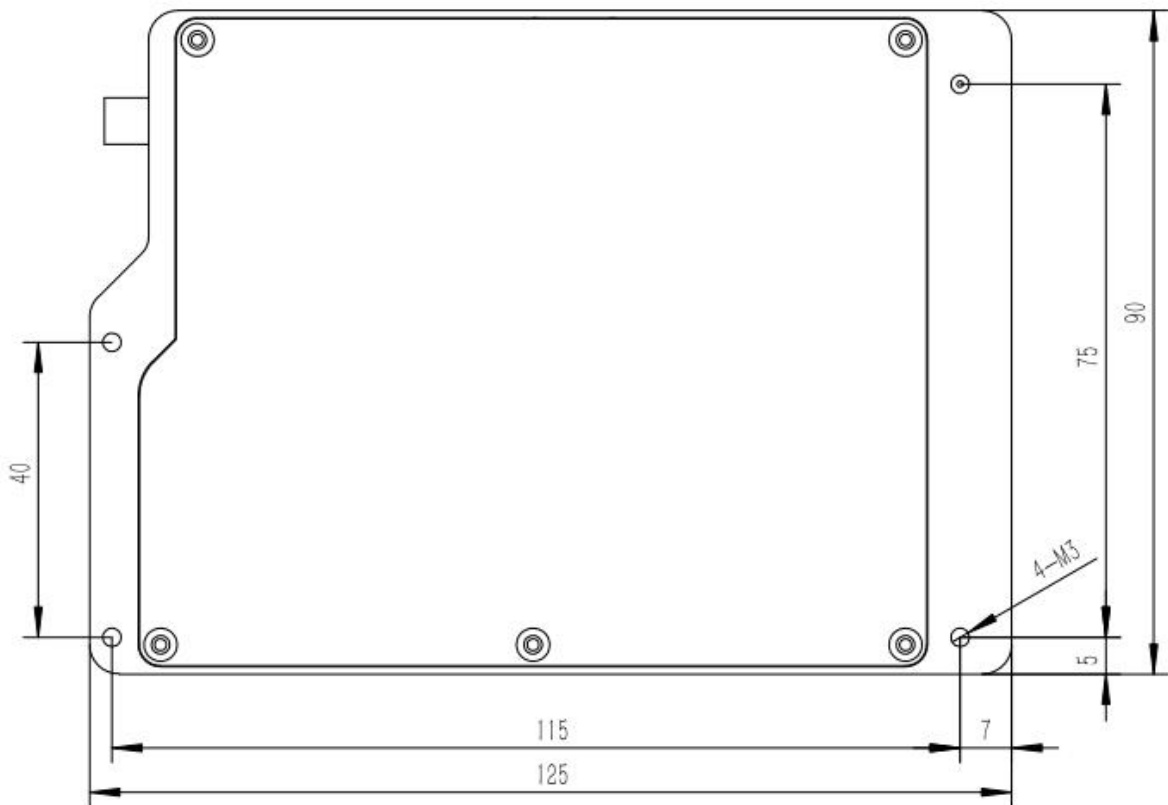


Specifications

Detector	
Type	Linear array detector
Detectable range	200-1100 nm
Effective pixel	2048 or 4096 pixels
Sensor Cooled	ATP3XXX: NO cooled; ATP5XXX: TEC cooled, -5 °C
Pixel dimension	14µm × 200µm
Sensitivity	1300 V/(lx·s)
Dark noise	13 RMS @ 13 °C
Optical Parameter	
Wavelength range	200-1100 nm (optimal design for >500 nm)
Optical resolution	0.05-3 nm
Signal-to-noise	>600:1
Dynamic range	8.5 × 10 ⁷ (system); 2000:1 for a single acquisition
Stray light	<0.05% at 600 nm; <0.09% at 435 nm
Optical Configuration	
Optical Design	Traditional M-shape C - T light path
Focal Distance	75mm
Incidence slit	50 µm (10, 25, 100, 200 µm are optional)
Incident Interface	SMA905 connector
Electrical Parameter	
Integration time	0.1 ms - 256 second
Interfaces	USB Type-C
A/D conversion resolution	16 bit
Supply voltage	DC 4.5 to 5.5 V (type @5V)
Operating current	ATP3330: 200mA, ATP5330: 1.5 A@Typ. 3A Max
Storage temperature	-30 °C to +70 °C
Operating temperature	-25 ~ 50 °C

Working humidity	< 90%RH
Physics Parameter	
Dimension	125 × 90 × 32 mm
weight	500 g (ATP3330), 670 g (ATP5330)

2 Mechanical Diagrams



3 Electrical Pin-out

Table 1 Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Power Supply				
Operating voltage range	4.5	5	5.5	V
Operating current		170		mA
Logic Inputs(3.3V LVTTTL, Five-volt tolerant)				
High level input voltage	1.7		3.6	V
Low level input voltage	-0.3		1.0	V
Logic Output(3.3V LVTTTL)				
High level output voltage	2.4			V
Low level output voltage			0.4	V

The module is equipped with a 30-pin male angled box header(2x15, 2.00 mm pitch) and Type-C interface.

Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V±0.5,
2	GND	/	Ground
3	UART_TX	Output	UART Transmit signal
4	UART_RX	Input	UART Receive signal
5	Lamp_En	Output	LVTTTL output the lamp enable signal.
6	Continuous_strobe	Output	LVTTTL output the continues strobe signal.
7	Ext_trigger_in	Input	LVTTTL input the trigger signal.
8	Single_strobe	Output	LVTTTL output the single strobe signal.
9	SPI_SCK	Output	The SPI Clock signal for communications to other SPI peripherals

10	SPI_MOSI	Output	The SPI Master Out Slave In (MOSI) signal for communications to other SPI peripherals		
11	SPI_MISO	Input	The SPI Master In Slave Out (MISO) signal for communications to other SPI peripherals		
12	SPI_CS	Output	The SPI Chip/Device Select signal for communications to other SPI peripherals		
13	GPIO0	Input /Output	General Purpose Software Inputs/Outputs, LVTTTL Logic.	Programmable	Digital
14	GPIO1	Input /Output	General Purpose Software Inputs/Outputs, LVTTTL Logic.	Programmable	Digital
15	GPIO2	Input /Output	General Purpose Software Inputs/Outputs, LVTTTL Logic.	Programmable	Digital
16	GPIO3	Input /Output	General Purpose Software Inputs/Outputs, LVTTTL Logic.	Programmable	Digital
17	GPIO4	Input /Output	General Purpose Software Inputs/Outputs, LVTTTL Logic.	Programmable	Digital
18	GPIO5	Input /Output	General Purpose Software Inputs/Outputs, LVTTTL Logic.	Programmable	Digital
19	GPIO6	Input /Output	General Purpose Software Inputs/Outputs, LVTTTL Logic.	Programmable	Digital
20	GPIO7	Input /Output	General Purpose Software Inputs/Outputs, LVTTTL Logic.	Programmable	Digital

4 Order Guide

Order number Rules:

Model	Spectral region		Slit width	
ATP5330	Short wavelength	Long wavelength	Slit width	

For example:

What to buy ATP5330, spectral region: 200-1000nm, slit width is 50 um, then the order no is:

ATP5030-200-1000-050

Order No	Spectral region	Slit	
ATP5330-200-400-###	200~400	10 μm	
ATP5330-200-850-###	200~850	25 μm	
ATP5330-200-1000-###	200~1000	50 μm	
ATP5330-340-850-###	340~850	100 μm	

ATP5330-600-1100-###	600~1100	200 μm	
ATP5330-###-###-###	Other	Other: _____ μm	

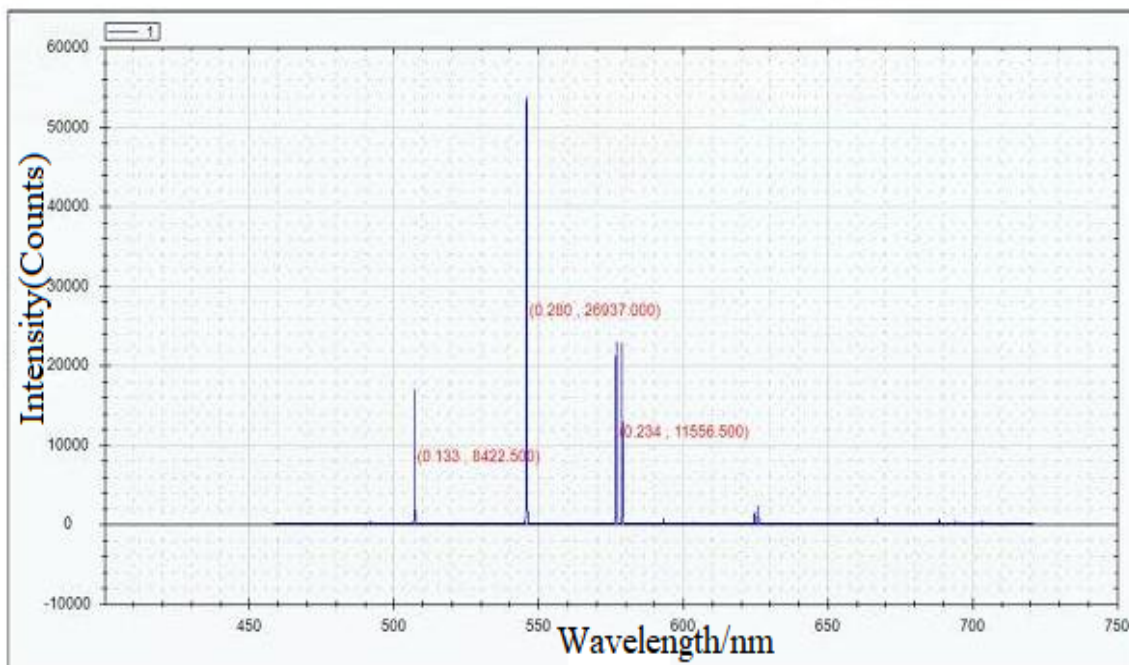


Fig 1 The spectrogram of ATP3334, 460-720nm, Optical resolution 0.133nm

5. Company Profile

Optosky company is a first-class spectroscopy solution provider, with the headquarter locates in the 7th floor of the research institute of the Chinese Academic of Science at an area of 2500 square meter in Xiamen city where successfully held the international 9th BRICK summit in 2017. The subsidiary company locates in Wuhu city with an area of 2035 square meters.

The company founder Dr. Hongfei, Liu graduated Doctor degree from the Chinese Academic of Science and postdoctoral degree from Xiamen University, by integrating both of top Universities' spectroscopy technology background into Optosky company aiming at developing the leading spectroscopy equipment in the world.

The company bases on unique technologies of Optomechatronics, Spectroscopy Analysis, Process Weak Optical and Electrical Signals, Cloud Computing, and have been developed wide products line of the competitive Raman spectroscopy instruments, micro spectrometer, hyperspectral imager, field spectroradiometer, fluorescence spectroscopy, LIBS etc. Driven by advanced technologies and products, Optosky brand has been well-known to customers all over the world.

Optosky company base on technology innovation, market-driven direction, customer first, provides first-class products and services, and one-stop solutions to many fortune 500 companies in many industries. The company received praise from different industry companies, as well as many innovative intellectual properties, software copyright, qualification certification, and winner awards over hundred numbers.

Optosky receives top class A introduced the high-tech company to international Xiamen city, the national high-tech and new innovative technology company award. The founder Dr. Hongfei Liu receives the innovation talent award by the ministry of science and technology.

The company is currently conducting the exclusive project of major industrialization national oceanic administration with a total fund of five million us dollars. The company in charge of drafting national industry standard of VNIR and SWNIR Field Spectroradiometer, and six national standard drafters, including China National Standard Drafter for Hazmat detector based on Raman spectroscopy, China National Standard Drafter for Buoy-type Monitor eco-environment, China National Standard Drafter for water quality monitor in the unmanned boat, China National Standards drafter for online water quality monitor by spectroscopy, China National Standard Drafter for UV-absorbent measure fabrics.

The company has over 70 IPs and over 20 innovative patents.

The company received ISO9001:2015 certification, CE certification, Police Administration Certification, FDA approval compliant, IQOQPQ compliant.

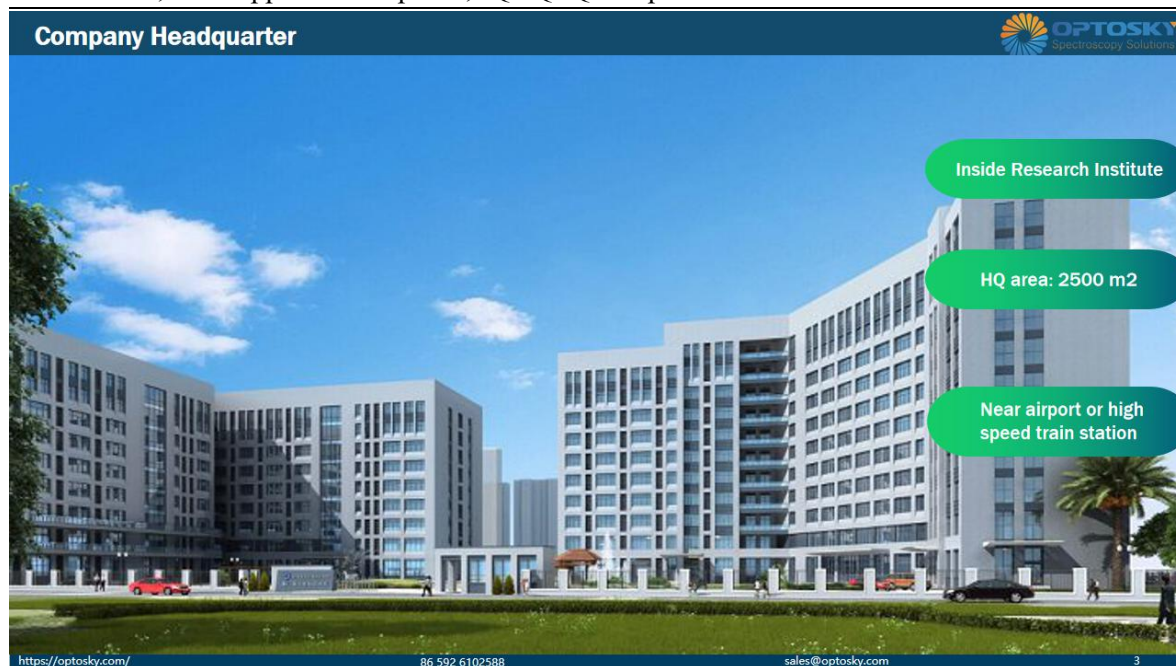


Figure 1 Optosky (Xiamen) Photonics Inc. Company Headquarter

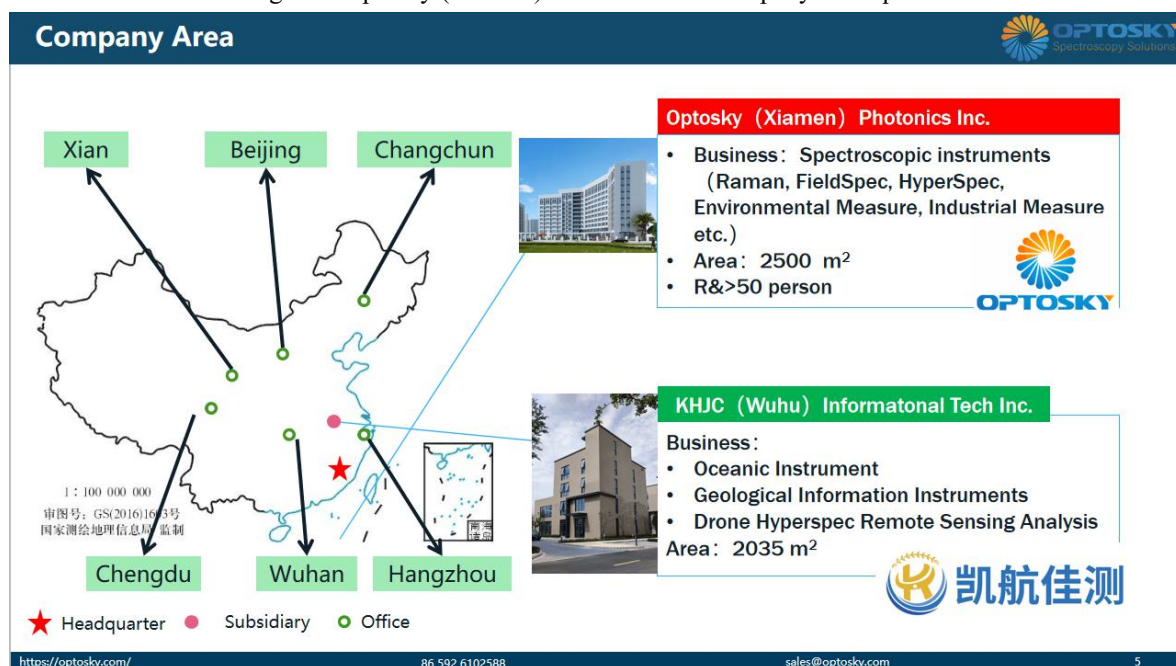


Figure 2 Optosky Company Area

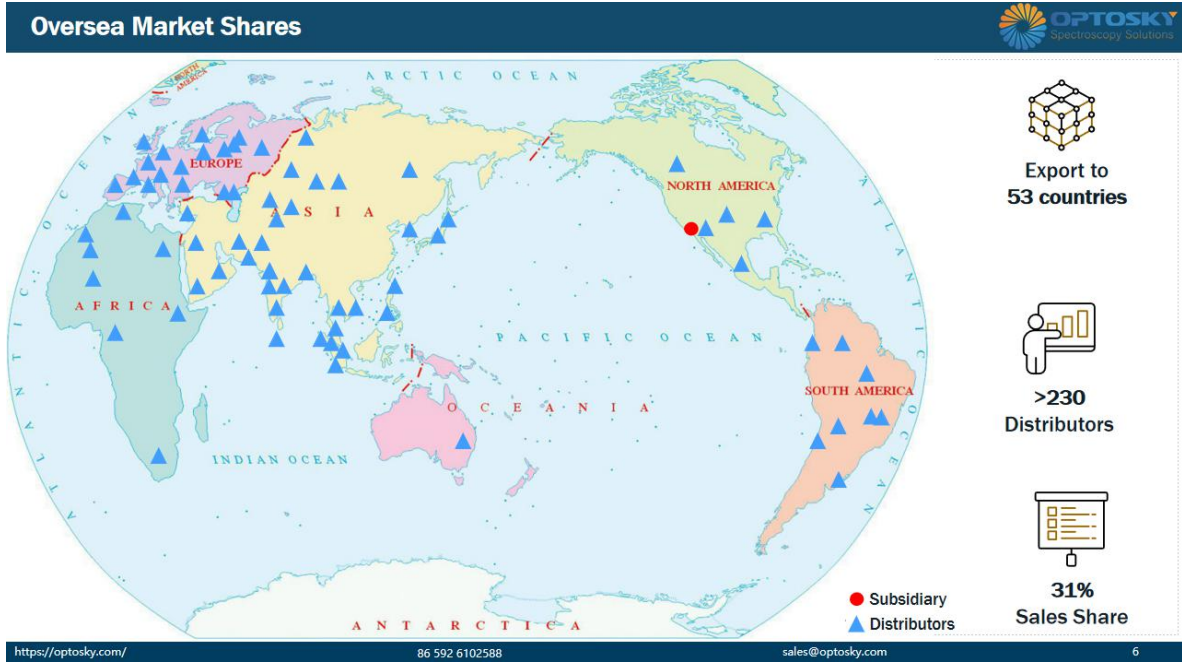


Figure 3 Oversea Market Shares



Figure 4 Optosky Chair and Draft National Standards Lists.

Qualification



 ISO9001:2005	 GB/T 23001 Informationization & Innovation	 CE, RoHS, LVD 17 models	 Police Approval 11 models
 GB/T 29490 IP implementation	 5 Innovative patents	 35 patents new utility design	 32 Software copyright

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Figure 5 Qualification

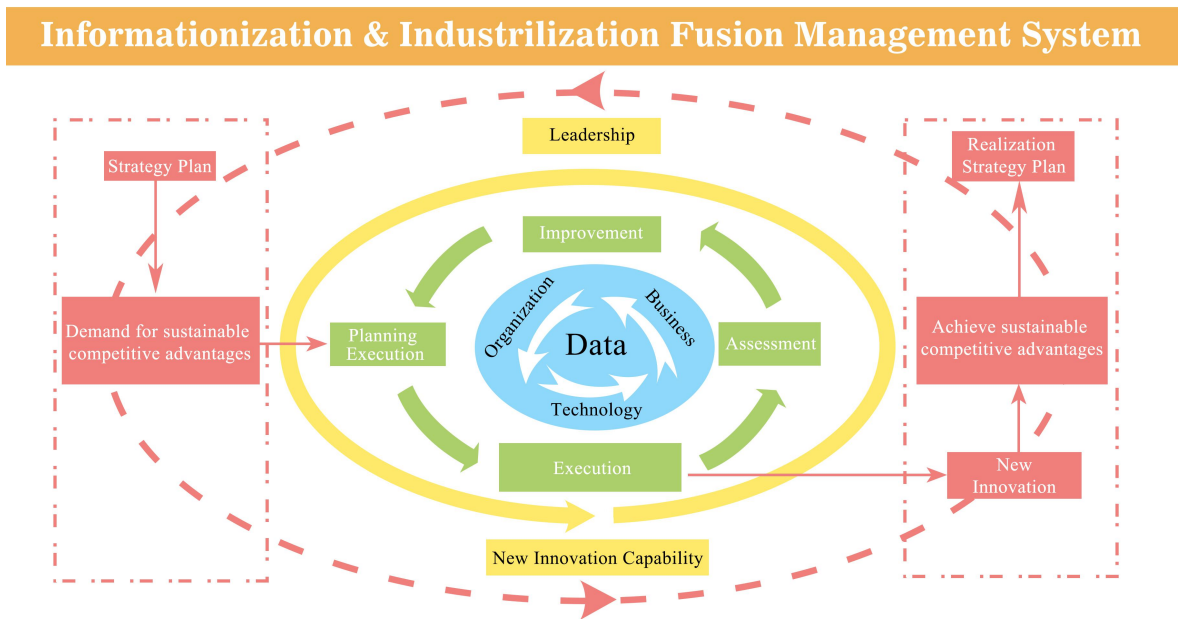


Figure 6 GB/T 23001_ Informationization & Industrilization Fusion Management System

Co-Founder—Dr. Hongfei Liu



Postdoctoral Hongfei Liu

- Selected "Innovative Talent" by Science and Technology ministry
- Top Class A Talent by Xiamen City
- CCTV Science & Technology Interview
- Fortune 500 experience in Agilent, II-VI

- Honors**
 - Selected by science & technology ministry as "Innovation Talent"
 - CCTV Science & Technology Interview
 - Top Class A Talent credited by Xiamen City
 - Innovation Hero**
- Education**
 - PhD • Chinese Science of Academic • Prof. Gui-Lin Chen, Originator in spectroscopy
 - Postdoctoral • Xiamen University • Prof. Zhong-Qun Tian guided by the SERS founder M.Fleischmann
- Career**
 - Engineer → R&D Manager → GM
 - Agilent**, Leader of instrument, Fortune 500 company, Job: engineer
 - II- VI Incorporated (Nasdaq: IIVI) leader in optical & electrical industries, Job: GM of Instrumentation and Automation
- Academic**
 - University graduate tutor
 - obtain more than 60 IPs, more than 10 Innovation patents;
 - Publish more than 20 papers, 2 recorded SCI, 8 recorded EI



Selected "Innovative Talent" by Science and Technology ministry

Top Class A Talent by Xiamen City

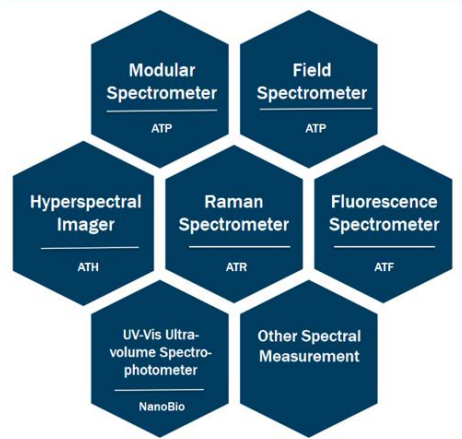
Founder & Tutors

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Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

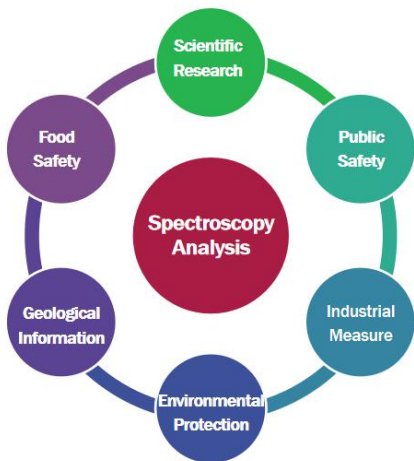
Category & Application

Category



Modular Spectrometer (ATP), Field Spectrometer (ATP), Hyperspectral Imager (ATH), Raman Spectrometer (ATR), Fluorescence Spectrometer (ATF), UV-Vis Ultra-volume Spectrophotometer (NanoBio), Other Spectral Measurement

Application




Scientific Research, Public Safety, Industrial Measure, Environmental Protection, Geological Information, Food Safety

Spectroscopy Analysis

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Figure 8 Category & Application

Model Name Rule


Model Name Rule:

- Prefix
- Category
- Model
- Suffix

Prefix

↓

Abbreviation
OPTOSKY

AT R

↑

Category

3000 - 1064

↑

Model

↑

Suffix

- **ATR** - Raman Spectrometer
- **ATP** - Micro Spectrometer
- **ATH** - Hyperspectral Imager
- **ATF** - Micro Fluorescence Spectrometer
- **ATL** - LIBS
- **ATW** - Water
- **ATE** - Environment Protect
- **ATFD** - Food Safety
- **GA** - Public Safety (**Gong An**)
- **GF** - Gas Monitor (**Gas Finder**)
- **GY** - Industrial Monitor (**Gong Ye**)

eg:

- Raman Microscope: ATR8300MP-1064
- Hyperspectral Imager: ATH9500

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Figure 9 Model Name Rule