

TE-Cooled CCD, For Raman, Mini. Spectrometer

ATR31107

Feature:

- Detector: Te-cooled detector;
- Detector Pixels: 2048/4096 pixels;
- Ultra-low noise CCD signal processing circuit;
- Optical Path: Cross C-T
- Integration Time: 2ms-60s
- Power Support: DC 5V±10% @ <2.3A
- 18 bit, 570KHz ADC (Actual output 16bit)
- Optical Input Interface: SMA905 or Free space
- Data Interface: USB2.0 (High speed) or UART
- 20 pin double row programmable outreach interface.

Application:

- Raman Spectrometer

Model	Detector Pixel	Te-cooled
ATR31107	2048 pixels CMOS	To -5°C
ATR31107-4	4096 pixels CMOS	To -5°C
ATR31107PS	2048 pixels Back-illuminated area CCD	To -5°C
ATR31107LT	Scientific Grade CCD	To -15°C

Description

ATR31107 is a high-performance refrigerated mini. spectrometer developed by Optosky. It adopts a specially cross C-T optical path topology for Raman spectroscopy signals to obtain high resolution and sensitivity, adopts high-sensitivity backlight Linear CCD, CCD adopts semiconductor refrigeration technology, CCD can work in a set constant temperature environment (as low as -15°C), thereby greatly reducing the noise of the sensor and obtaining an excellent signal-to-noise ratio (about 2 times higher than similar competitors), and improve the measurement reliability of ATR31107, the measurement result does not change with the ambient temperature.

At the same time, Optosky specially customized the ultra-low noise CCD signal processing circuit for ATR31107, and its quantization noise is less than 3 counts, which is the best level in the industry. ATR31107 can receive SMA905 optical fiber input light or free space light, and output the measured spectrum data through USB2.0 or UART port.

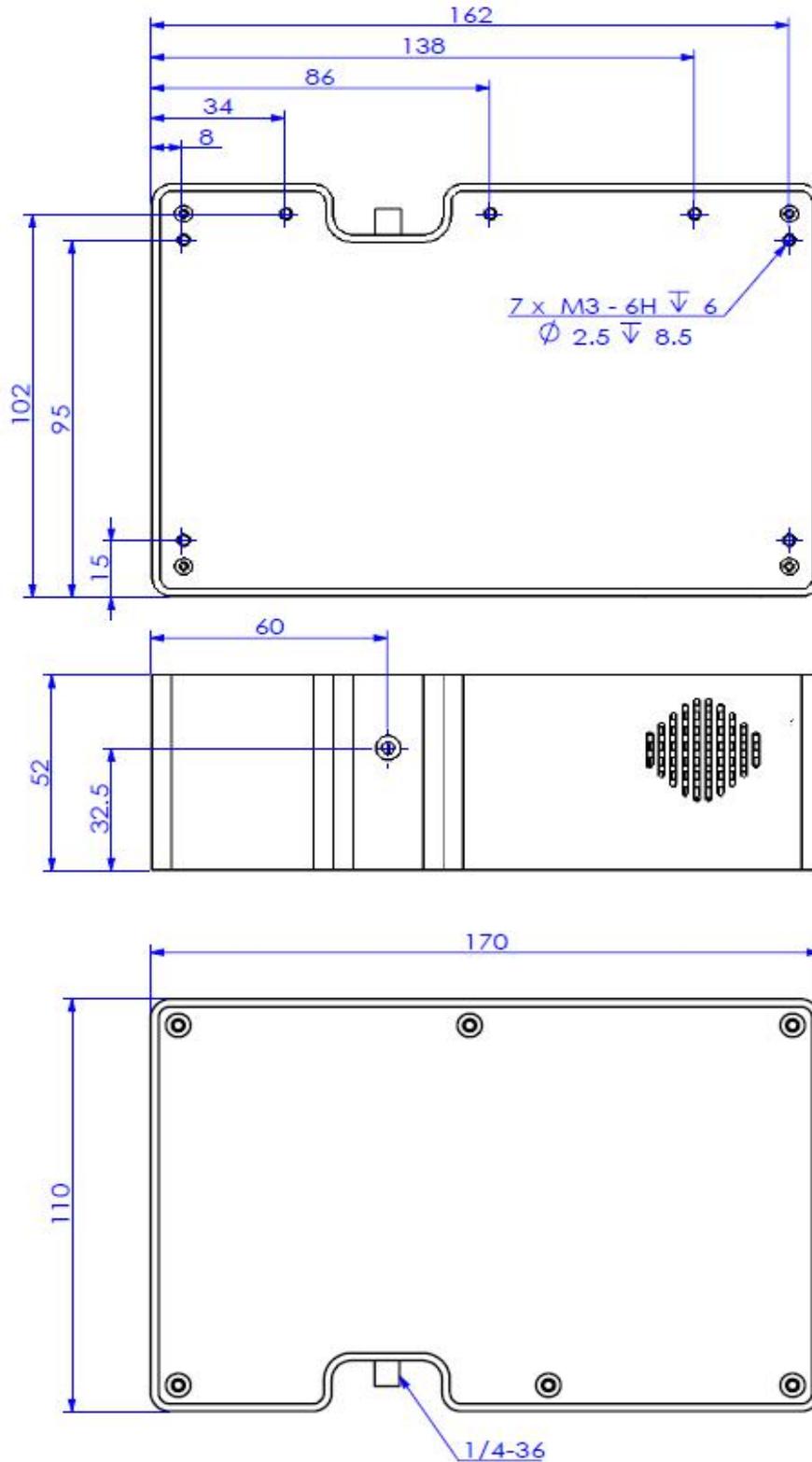
ATR31107 only needs a 5V DC power supply, which is very easy to integrate and use.



1 Parameter

Detector	
Model	Back-thinned Linear CCD (Cooled to -10°C)
Wavelength Range	790-1150 nm
Effective Pixels	2048×64
Pixel Size	14μm×14μm
Full Well Capacity	~200 ke ⁻
Sensitivity	6.5 uV/e ⁻
Dark Noise	6 e ⁻
Optical Parameter	
Wavelength Range	180-1180 nm (Can be customized)
Optical Resolution	0.01-1.3 nm (Depends on the slit)
SNR	>3000:1
Dynamic Range	10000: 1
Working Temperature	-10 - 45 °C
Working Humidity	< 85%RH
Optical Path	
Optical Path	F /4 cross asymmetric C-T optical path
Focus	98 mm for incidence / 107 mm for output
Slit Width	5、10、25、50、100、150、200 μm optional, can be customized.
Light Interface	SMA905 fiber interface, Free space
Electrical Parameter	
Integration Time	1 ms - 130 second
Data Interface	USB 2.0
ADC Depth	18 bit (16bit output)
Power Supply	DC 5V±10%
Operating Current	<2.3A
Storage Temperature	-20°C to +70°C
Operating Temperature	-10°C to +40°C
Physical Parameter	
Dimension	170×110×52 mm ³
Weight	0.8 kg
Sealing	Anti-sweat

2 Mechanical Diagrams



3 Spectrum

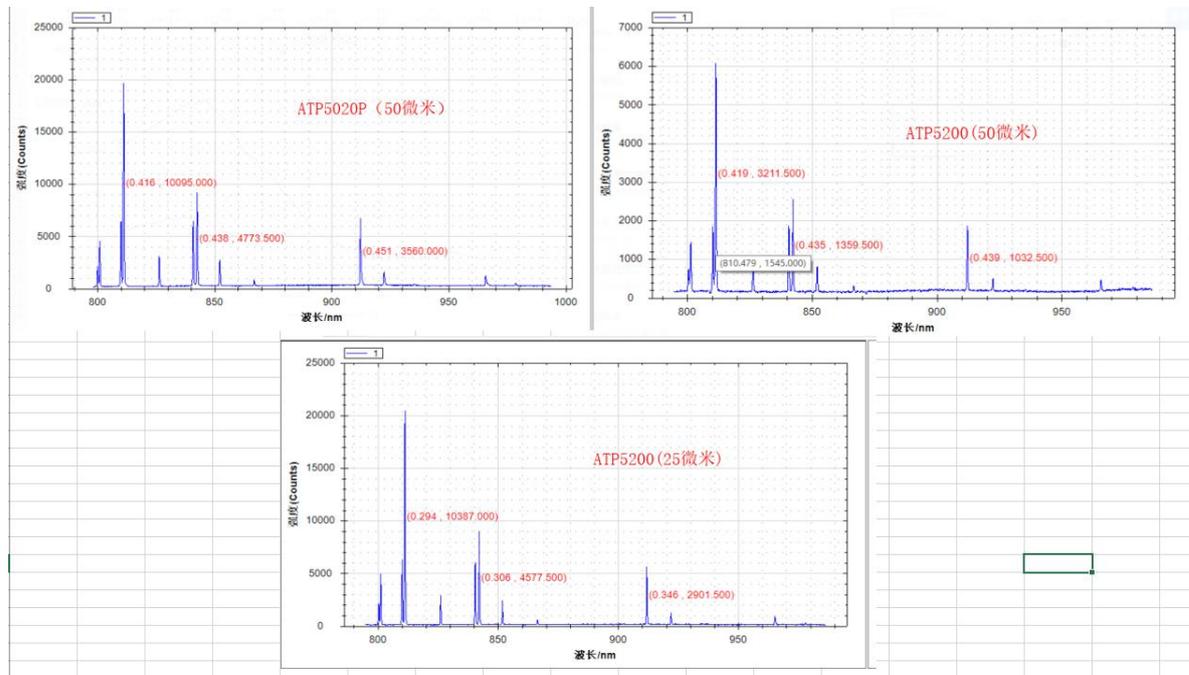


Figure 1 The measured spectral resolution of ATR31107 is about 3.5cm⁻¹, with 200~2600cm⁻¹ spectral range

4 Application

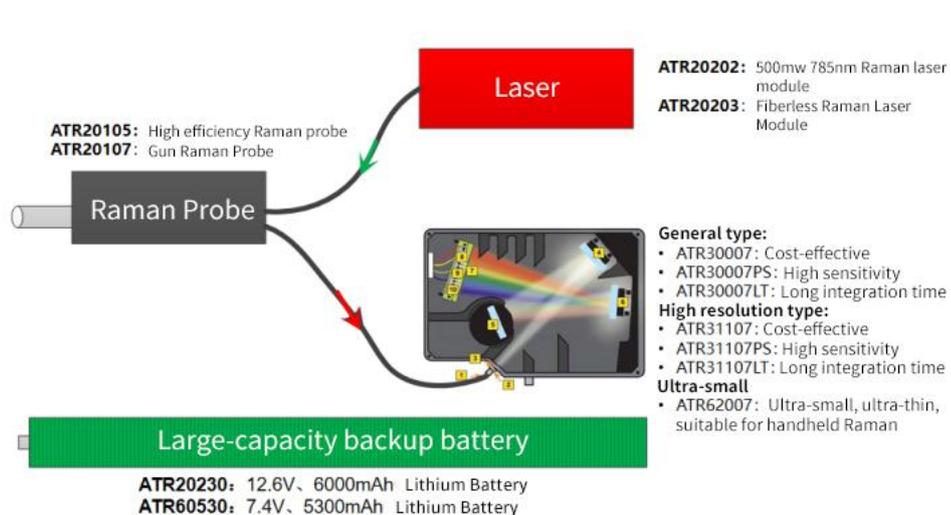


Figure 2 Raman spectrometer system composition structure



Figure 3 Raman system physical picture

5 ATR20105 Order Guide



Order No	Spectral region
ATR20105-785	For 785 nm Raman Spectrometer
ATR20105-1064	For 1064 nm Raman Spectrometer
ATR20105-532	For 532 nm Raman Spectrometer

ATR20105-830	For 830 nm Raman Spectrometer
ATR20105-473	For 473 nm Raman Spectrometer

6 ATR20107 Order Guide



Figure 4 ATR20107, the gun-type Raman probe. The parameters is the same as ATR20105

Order No	Spectral region
ATR20107-785	For 785 nm Raman Spectrometer
ATR20107-1064	For 1064 nm Raman Spectrometer
ATR20107-532	For 532 nm Raman Spectrometer
ATR20107-830	For 830 nm Raman Spectrometer
ATR20107-473	For 473 nm Raman Spectrometer

7 Other Products



Figure 5 Raman spectrometer series by Opotosky

8 Company Profile

Optosky company is an 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 meter.

The company founder Dr.Hongfei,Liu graduated Docter degree from Chinese Academic of Science and postdoctral 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 technologies 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 industries companies, as well as many innovative intellectual property, software copyright, qualification certification, and winner awards over hundred numbers.

Optosky receives top class A introduced 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 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 dollar. The company in charge of drafting national industry standard of VNIR and SWNIR Field Spectroradiometer, and six national standard drafter, 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 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 6 Optosky (Xiamen) Photonics Inc. Company Headquarter

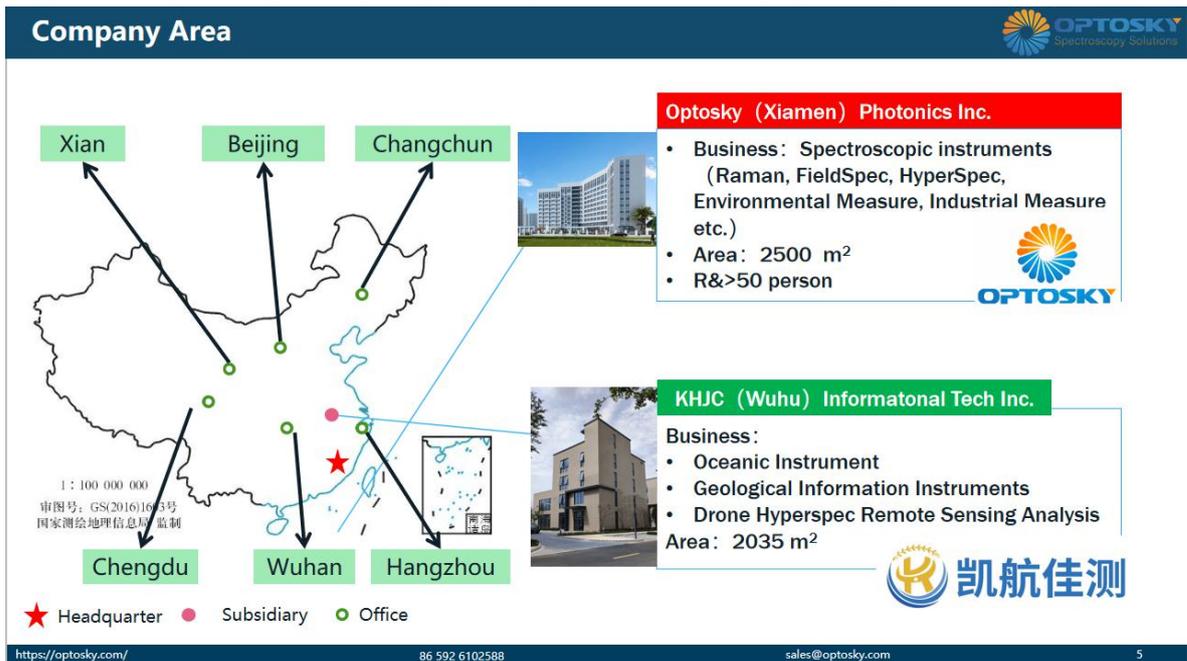


Figure 7 Optosky Company Area

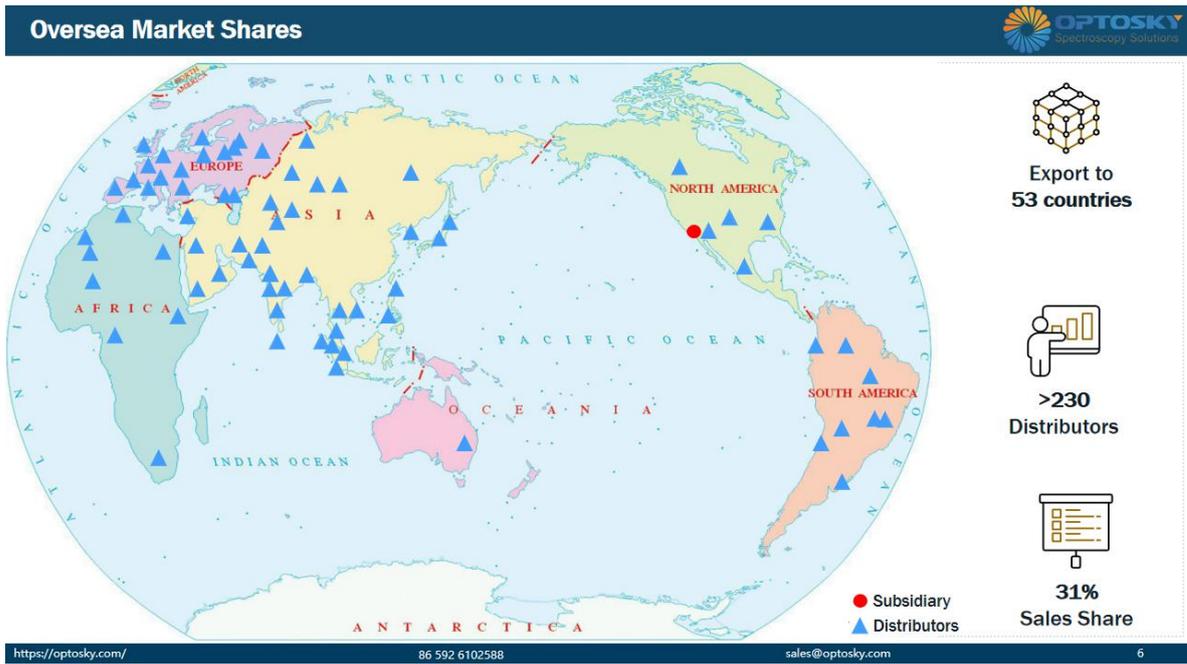


Figure 8 Overseas Market Shares



Figure 9 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 10 Qualification

Informationization & Industrilization Fusion Management System

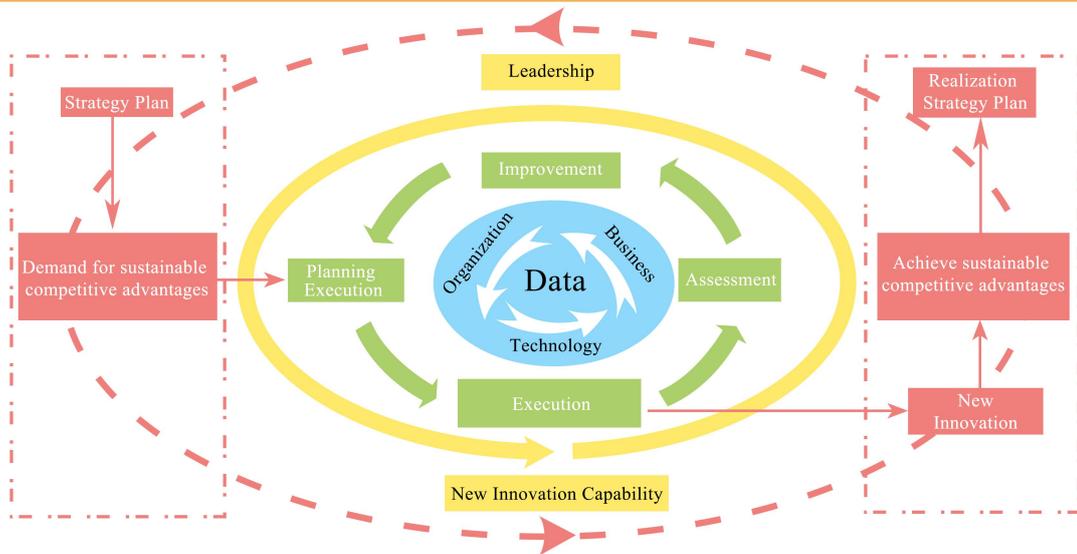


Figure 11 GB/T 23001_ Informationization & Industrilization Fusion Management System

Co-Founder—Dr. Hongfei Liu



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

Postdoctoral Hongfei Liu

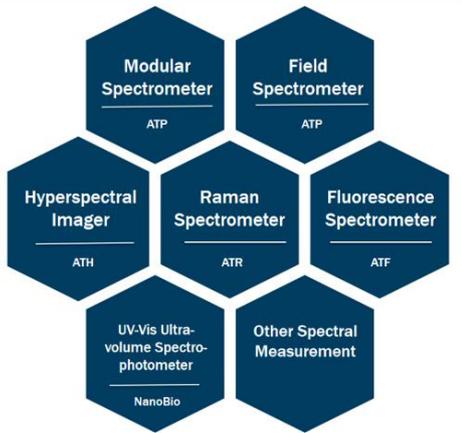
- Selected "Innovative Talent" by Science and Technology ministry
- Top Class A Talent by Xiamen City
- CCTV Science & Technology Interview
- Fortune 500 experience in Agilent, II-VI

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Figure 12 Optosky's Co-founder_Dr. Hongfei Liu

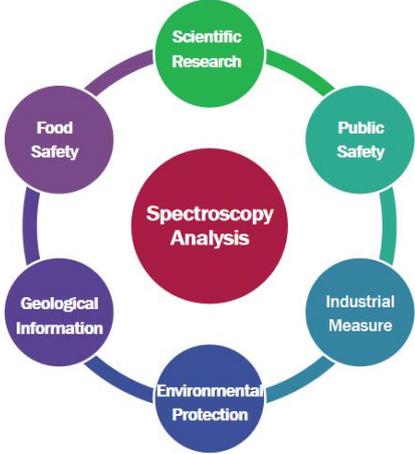
Category & Application

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

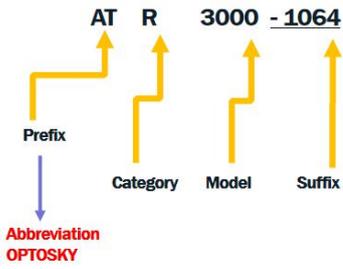
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Figure 13 Category & Application

Model Name Rule


Model Name Rule:

- Prefix
- Category
- Model
- Suffix



- **ATR** – Raman Spectrometer
- **ATP** – Micro **S**pectrometer
- **ATH** – **H**yperspectral Imager
- **ATF** – Micro **F**luorescence Spectrometer
- **ATL** – **L**IBS
- **ATW** – **W**ater
- **ATE** – **E**nvironment **P**rotect
- **ATFD** – **F**ood **S**afety
- **GA** – Public Safety (**G**ong **A**n)
- **GF** – Gas Monitor (**G**as **F**inder)
- **GY** – Industrial Monitor (**G**ong **Y**e)

eg:

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

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Figure 14 Model Name Rule

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