

Portable Multi-wavelength Excitation Fluorescence Spectrometer

ATF3100

Features

- Compact and portable, operates at low-voltage; supports DC power supply for field-site testing
- Adopts high-stability LED light source with no preheating required for stable measurement
- Equipped with linear-array CMOS detector to realize rapid detection
- Simple and intuitive operation interface greatly shortens user learning curve
- Freely-switchable multi-wavelength excitation light sources for multi-scenario applications, applicable to water quality monitoring, chlorophyll detection, food additive testing, chemical material analysis and biological sample detection

Application

- Materials Science
- Biomedicine
- Food Inspection
- Environmental Science
- Water Body Detection
- Energy Catalysis
- Chemistry and Chemical Engineering
- Geological Science
- Teaching and Scientific Research



Description

A fluorescence spectrometer is a high-sensitivity analytical instrument based on molecular fluorescence. It measures fluorescence emitted by excited substances for qualitative and quantitative analysis of sample composition, structure and properties. With high sensitivity, good selectivity, fast testing and wide applicability, it is widely used in life sciences, materials science, environmental monitoring, food safety, drug development and other fields. It plays an important role in scientific research and industry, and its continuous development offers strong technical support for various applications.

Developed by Optosky leveraging 20-year spectrometer-making experience, the ATF3100 multi-wavelength excitation fluorescence spectrometer is a high-performance portable compact fluorescence testing device. It supports real-time fluorescence signal monitoring at specific wavelengths and continuous emission spectrum scanning. It fits water-quality monitoring, oil pollution detection, chlorophyll analysis, drug testing, food inspection, rapid screening of fluorescent materials and other scenarios. Featuring multi-wavelength excitation, small size, portability, high sensitivity, stable performance, good resolution and easy operation, the ATF3100 provides reliable fluorescence-detection solutions for diverse research and industrial uses.

The ATF3100 has a well-tical system to ensure high analytical accuracy, with-designed op multiple optional accessories for different testing needs. It comes with Optosky's user-friendly interface for quick-start operation. Users can export connected-device data for further analysis.

1. Model Selection Guide

Table 1: ATF3100 Product Selection Table

Model	Excitation Light Source	Detector
ATF3100	370、450、520、575、595、610 nm (Visible excitation band, wavelength customizable)	Linear-array CMOS detector, wavelength range: 190-1100 nm
ATF3100A	290、310、360、375、435、465nm (UV-Vis excitation band, wavelength customizable)	
ATF3100B	220、275nm (UV excitation band, wavelength customizable)	

2. Performance Parameters

Table 2: ATF3100 Performance Specifications

Model	ATF3100	ATF3100A	ATF3100B
Light Source	High-stability LED light source		
Light Source Wavelength	370、450、520、575、595、610 nm	290、310、360、375、435、465 nm	220、275 nm
Detector	Linear array CMOS		
Effective Pixels of Detector	2048*1		
Wavelength Range of Detector	190-1100 nm		
Signal-to- Noise Ratio (Water Raman Peak)	S/N>300(RMS) Test conditions: Excitation wavelength – 370 nm; Integration time – 2s; Calculation of root-mean-square noise over the 520–560 nm baseline range.		
Spectral Resolution	2 nm		
Emission Wavelength Accuracy	±1.0 nm		
Emission Wavelength Repeatability	±1.0 nm		
Excitation Wavelength Repeatability	±1.0 nm		
Measurement Linearity	≥0.995		
Spectral Peak Intensity	≤1.5% (Quinine sulfate standard solution)		

Repeatability	
Detection Limit	1×10-10g/mL (Quinine sulfate standard solution)
Power Supply	DC 4.5-5.5 V
Communication Interface	USB2.0
Operating Humidity	45-80%
Operating Temperature	10-35 °C
Dimension	length, width and height 317*210*82 mm
Weight	3 kg

3. Product Exterior View



Figure 1: Exterior view of the ATF3100 portable multi-wavelength excitation fluorescence spectrometer

4. Optional Accessories

Table 3: Standard and Optional Accessories for ATF3100

Standard Fitting	
1	Power Line
2	USB Data Wire
3	10 mm Quartz Fluorescence Cuvette
4	USB flash drive (includes dedicated PC software)
5	Appendices (including packing list, instruction manual, certificate of conformity, etc.)
Optional Accessories	
1	Solid Sample Holder
2	Membrane Sample Holder

3	Manual filter set
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5. Selected Application Scenarios

Application Area	Typical Applications	Common sample types
Water Examination	1. Dissolved Organic Matter (DOM) detection 2. Traceability of water pollutants 3. Water quality early- warning (detection of algae, toxins, complexed heavy- metal ions) 4. Screening for disinfection by- product precursors (DBPs) in drinking water Detection of residues in treated wastewater	Surface water, groundwater, rainwater, drinking water, industrial wastewater, seawater, treated sewage, soil extract
Environmental Monitoring	1. Detection of atmospheric organic pollution 2. Detection of atmospheric particulate matter (fluorescent aerogel, pollen, bacteria, etc.) Detection of volatile fluorescent substances in workshops / laboratories	Urban air, forest- field air, farmland air, indoor air, factory workshop air, vehicle / aircraft cabin air
Biomedical Detection	1. Drug purity detection 2. Release kinetics monitoring of sustained- release drugs 3. Identification and content determination of active ingredients in traditional Chinese medicine 4. Detection of pharmaceutical by- products 5. Detection of drug degradation products 6. Application research of fluorescent probes 7. Biological fluorescence detection (chlorophyll fluorescence, bioluminescence, etc.) 8.Pathological biomarker detection	Pharmaceuticals, drug raw materials, drug extracts, biological samples, biological preparations, DNA/RNA samples, fluorescent probe- cell samples, tissue extracts
Food/Daily Necessities Quality Testing	1. Detection of fluorescent whitening agents in food / daily necessities 2. Detection of toxic fluorescent substances in	Flour, paper, beverages, dairy products, edible oil, honey, grain crops, artificial food, toys, clothing, detergents

Application Area	Typical Applications	Common sample types
Chemistry and Materials Science	toys 3. Mycotoxin detection (e.g. Aflatoxin B1, Ochratoxin A) 4. Evaluation of oil oxidation degree 5. Detection of protein denaturation in dairy products 6. Authenticity identification of natural products such as honey and fruit juice	Quantum dots (CdTe, ZnS), fluorescent probes, fluorescent dyes, nanocomposites, rare- earth materials, graphene, perovskites, catalysts, chemical synthetics, polymer samples, resins, synthetic plastics, chemical reagents, fluorescent sensing materials/chips, LED materials/devices
	1. Performance characterization of fluorescent probes / quantum dots 2. Preliminary screening of scintillator materials 3. Development and research of rare- earth luminescent materials 4. Luminescence property research of carbon nanomaterials 5. Exploration of polymer fluorescent materials 6. Research and development of fluorescent solar concentrators 7. Performance verification of fluorescent sensors 8. Study on fluorescence quenching / enhancement effect of photocatalytic materials 9. Research and process monitoring of chemical synthetic products 10. Development and performance study of fluorescent dyes 11. Photostability study of chemicals and materials 12. Luminescence performance research of LED materials and devices	
Petrochemical Industry	1. Identification of oil product quality 2. Component analysis of crude oil / fuel oil 3. Evaluation of lubricating oil aging degree 4. Oil- gas exploration 5. Identification of crude oil pollution	Crude oil, gasoline, diesel oil, lubricating oil, drilling fluid, petrochemical wastewater, contaminated soil samples
Agricultural	1. Monitoring of soil organic matter (SOM)	Soil, soil extracts, plant tissue samples

Application Area	Typical Applications	Common sample types
Science	transformation process 2. Rapid screening of pesticide residues (e.g. organophosphorus, triazine-based fluorescent pesticides) 3. Plant growth and health monitoring 4. Detection of soil pollutants 5. Research on decomposition process of organic fertilizer 6. Research on humus content and decomposition 7. Monitoring of toxic substances during plant growth cycle	(fruits, seeds, leaves, flowers, pollen, epidermis, endothelium, etc.), plant extracts, pesticide formulations, farmland irrigation water, organic fertilizers, plant secretions

6. Similar products manufactured by Optosky



Figure 2: The fluorescence product series produced by Optosky

7. Optosky—Company Profile

Optosky was founded in 2015 with group headquarters in Xiamen, a picturesque coastal city. It is a **national-level key "Little Giant"** enterprise featuring specialization, refinement, differentiation and innovation, dedicated to the R&D, production and sales of high-end spectral analysis instruments. The enterprise was initiated by **Dr. Liu Hongfei**,

an international specialist in spectral instruments, who is an academican of the Russian Academy of Natural Sciences, leading talent of the National Ten-Thousand Talents Program, beneficiary of the Ministry of Science and Technology Innovation Talent Promotion Program, Class A talent under Xiamen Double Hundred Talent Program, PhD holder from Shanghai Institute of Technical Physics, Chinese Academy of Sciences and postdoctoral fellow of Xiamen University. The company devotes itself to developing globally advanced spectral analysis instruments and aims to be a top-tier international supplier of spectral instruments, evolving into a domestic pacesetter in the spectral instrument sector.



Figure 7.1: Group Profile

联合创始人——刘鸿飞博士 (全职)



刘鸿飞 博士、教授

- 俄罗斯自然科学院 院士
- 国家“万人计划”领军人才
- 科技部“创新人才推进计划”
- 教育部“长江学者”评审专家
- 福建省高层次人才A类
- 厦门市双百计划 A类人才 (最高等级)
- 荣获福建省科技进步二等奖

科研

- 主持科技部重点研发计划, 600万元
- 主持工信部专精特新重点小巨人项目, 600万元
- 主持江苏省前沿技术研发计划, 1000万元
- 主持湖南省揭榜挂帅重大项目, 300万元
- 主持福建省高层次人才团队项目, 300万元
- 主持厦门市海洋经济产业化重大项目, 4576万元
- 主持厦门市未来产业重大项目, 100万元
- 参与国家级项目6项、省部级项目10余项

20+项
国家、省市级
科研攻关项目

荣誉

- 长沙市天心区人大代表
- 中国仪器仪表协会分析仪器分会, 副总干事
- 中国光学工程学会, 理事
- 湖南仪器仪表协会, 副理事长
- 长沙天心经开区商会, 会长 (首届)
- 厦门大学湖南校友会企业分会, 会长 (首届)
- 厦门大学电子校友会, 副理事长

22 项
国家和行业、团体
标准

学历

- 本科·厦门大学 | 电子工程
- 博士·中科院上海技术物理所 | 航天遥感
师从陈桂林院士、孙胜利院士
- 博士后·厦门大学 | 光谱分析

500+件
知识产权

历练

- 从工程师 → 研发经理 → 事业部总经理
- Agilent, 仪器行业领头羊, 世界500强, 工程师
- 美国II-VI (NASDAQ上市企业, 全球光电龙头业), 任职: 仪器与自动化事业部总经理

100+件
发明专利

Figure 7.2 Dr. Liu Hongfei, co-founder of Aopu Tiancheng

Optosky Group owns **five national high-tech enterprises**. It has established multiple R&D and manufacturing bases across China in Xiamen, Changsha, Wuhan, Chengdu, Xuzhou, Wuhu and other cities. The total global office space exceeds **30,000 square meters**, and the company employs more than 450 staff members, including **over 220** seasoned R&D engineers. The company has filed and obtained **more than 500** intellectual property rights, among which **over 100** are invention patents including two US invention patents. Currently, it undertakes more than **20 national, provincial and municipal research projects** such as a major industrialization special project sponsored by the State Oceanic Administration with total funding of 30 million RMB. Meanwhile, Optosky presides over and participates in formulating **over 20 national, industrial and association standards**. Standards led by the company: Near-infrared Terrestrial Object Spectrometer, Rapid Water Quality Detector Using Spectroscopy, Technical Specification for Multispectral Imaging in Smart Agriculture, Handheld Fruit Quality Detector, Technical Requirements for Medical Near-infrared Spectrometer, Portable Rapid Water Quality Detector Using Spectroscopy, etc. Standards participated in formulation: Technical Specification for Raman Spectrometer, Hazardous Chemical Detector Based on Raman Spectroscopy, Online Rapid Water Quality Detection System Using Spectroscopy, Technical Specification for Ecological Environment Monitoring System Based on Mobile or Fixed Buoys, Determination of Benzophenone Ultraviolet Absorbers in Textiles, Determination of Antifungal Performance of Textiles Part 1: Fluorescence Method, Plant Phenotype Chlorophyll Fluorescence Imaging Analysis Equipment, Technical Requirements for Plant Monitoring Using UAV Hyperspectral Remote Sensing, etc. Optosky keeps guiding the formulation of spectral technical standards and industrial upgrading.

Figure 7.3: Aopu Tiancheng National R&D Center/Smart Manufacturing Base

▶ 奥谱天成集团简介 (总部与子公司)



▶ 主持和参与制定的多个国家标准



	主持制定 国家行业标准 《可见近红外地物光谱仪》	主持制定 国家团体标准 《智慧农业 多光谱成像技术规范》	主持制定 国家团体标准 《手持式水果品质检测仪》	主持制定 国家团体标准 《医用近红外光谱仪技术要求》	主持制定 国家团体标准 《便携式光谱法快速水质检测仪》
国家标准 《拉曼光谱仪通用规范》	国家标准 《基于拉曼光谱技术的危险化学品安全检查设备》	国家标准 《粮油检验 油菜籽水分、芥酸、含油量测定 近红外法》	行业标准 《远程时间分辨拉曼光谱仪》	团体标准 《SF6气体分解物拉曼光谱在线监测装置技术要求》	团体标准 《近红外光谱分析技术术语》
国家标准 《傅立叶变换红外光谱仪》	国家标准 《危险气体光谱视频测控预警系统技术规范》		团体标准 《光谱法水质在线监测仪》	团体标准 《浮标式生态环境监测仪》	团体标准 《陆基光谱遥感水质多参数监测技术》
国家标准 《纺织品 二苯甲酮类紫外线吸收剂的测定》	国家标准 《纺织品 抗菌性能的测定 第1部分：荧光》		团体标准 《基于无人机高光谱遥感的植物监测技术要求》 (排名第二)	团体标准 《植物表型叶绿素荧光成像分析系统技术要求》 (排名第三)	

Figure 7.4: Leading and participating in multiple national standards

Relying on its exclusive technologies including opto-mechatronics integration, spectral analysis, weak photoelectric signal processing and cloud computing, Optosky has built a full-spectrum product portfolio with Raman spectrometers as flagship products, covering fiber spectrometers, hyperspectral imagers, field spectroradiometers, infrared spectrometers, fluorescence spectrometers, spectrophotometers and LIBS instruments. These products are widely adopted in scientific research, semiconductor, new energy, biomedicine, chemical pharmacy, public security, smart agriculture, military industry and other fields, ranking among the world's top tier in both product performance and brand influence. Its products are sold to more than 70 countries and

regions worldwide. Optosky is the top Chinese optical instrument brand in Russia, among the top three high-end optical instrument brands in the Middle East, and one of the fastest-growing Chinese brands in Europe and America. The company has realized domestic substitution and export breakthroughs for high-end spectral instruments.

主要产品及应用



Figure 7.5: Main Product Series and Application Areas

Optosky bases its development on technology, follows market demands and prioritizes customers, delivering outstanding solutions and high-quality products and services for numerous industries. Widely recognized by governments at all levels and the industry, the company has acquired **more than 300** innovation patents, software copyrights, qualification certifications and domestic and international honors in total.

The enterprise holds multiple accreditations and honors including National Key Specialized, Sophisticated, Unique and **Innovative Little Giant Enterprise**, Key Pre-listing Enterprise of Xiamen, Leading Industrial Talent Team of Fujian Province, Xiamen Industrial Technology Center, Fujian Gazelle Enterprise, Class A key introduction

project of Xiamen Double Hundred Talent Program and National High-tech Enterprise. It has also been awarded Xiamen Specialized, Sophisticated, Unique and Innovative Enterprise, Xiamen High-tech, High-growth and High-value Key Enterprise and Xiamen High-tech Enterprise.

Partial Honors Obtained by Optosky:

- August 2025: Won the first prize in the final of the New Generation Information Technology Industry Group, Sichuan Division, the 14th China Innovation and Entrepreneurship Competition 2025
- July 2025: Approved as a Postdoctoral Innovation and Entrepreneurship Practice Base
- July 2025: Listed as a national-level key Specialized, Sophisticated, Unique and Innovative Little Giant enterprise
- March 2025: Approved for the Changsha Expert Workstation
- September 2024: Selected as a national-level Specialized, Sophisticated, Unique and Innovative Little Giant enterprise
- June 2023: Named a key pre-listing enterprise of Xiamen
- May 2023: Included in the Leading Industrial Talent Team Program of Fujian Province
- 2023: Accredited as Xiamen Industrial Technology Center
- 2022: Dr. Liu Hongfei elected an academician of the Russian Academy of Natural Sciences
- 2022: Recognized as a Fujian Torch Gazelle Enterprise
- 2022: Certified as a Fujian technology-based small and medium-sized enterprise
- December 2021: Its Raman spectrometer won the Second Prize of Fujian Provincial Science and Technology Progress Award
- 2021: Dr. Liu Hongfei selected for the National Ten-Thousand Talents Program organized by the Central Organization Department 2021: Optosky awarded Fujian Provincial Science and Technology Little Giant Enterprise
- 2020: Dr. Liu Hongfei included in the Innovation Talent Promotion Program of the Ministry of Science and Technology
- 2020: Led the formulation of the national industrial standard Visible and Near-Infrared Field Spectroradiometer
- 2020: Dr. Liu Hongfei certified as Class B high-level talent of Fujian Province 2019: Certified as a national high-tech enterprise
- 2019: Honored the Independent Innovation Gold Medal issued by China Instrument and Control Society
- 2019: Recognized as a Specialized, Sophisticated, Unique and Innovative micro and small enterprise in Xiamen
- 2018: Won Excellent Enterprise Award in the National Final of the 7th China Innovation and Entrepreneurship Competition
- 2018: Received the second prize in Xiamen Division, the 4th China Innovation and Entrepreneurship Competition
- 2018: Won Silver Award in Fujian Division and Bronze Award in National Final of the

5th World New Materials Innovation and Entrepreneurship Competition

- 2016: Included in Class A key high-level talent introduction project (highest tier), the 8th Xiamen Double Hundred Talent Program
- Listed on Strait Equity Exchange Market, Stock Code: 865147
- Certified compliant with ISO9001:2015 Quality Management System
- Participated in formulating national standards Raman Spectrometer and Hazardous Chemical Detector Based on Raman Spectroscopy Technology
- Undertaken the major marine economic collaborative innovation project Research, Development and Industrialization of Marine Three-Dimensional Monitoring Sensors and Systems sponsored by State Oceanic Administration with total funding of RMB 30 million
- Established strategic partnership with School of Electronic Science and Engineering, Xiamen University since 2017
- Served as undergraduate internship base and joint postgraduate training institution of Xiamen University of Technology since 2016
- Served as undergraduate internship base and joint postgraduate training institution of Jimei University since 2017
- Member unit of Fujian Young Entrepreneurs Association; director unit of Xiamen Young Entrepreneurs Association
- Implementation entity for industry-university-research cooperation projects of Xiamen
- Member unit of Xiamen Emergency Association

8. Contact Us

Company Name: Optosky (Xiamen) Optoelectronics Co., Ltd.

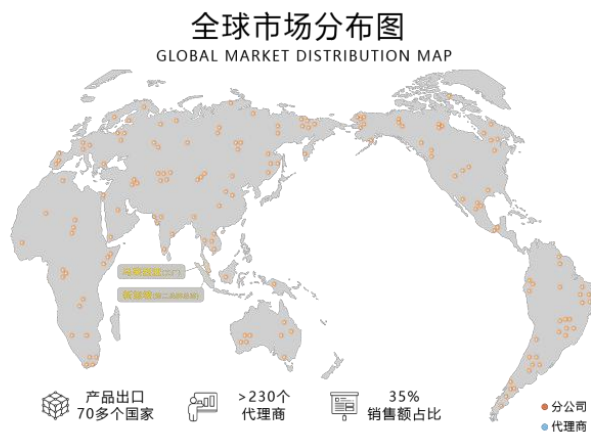
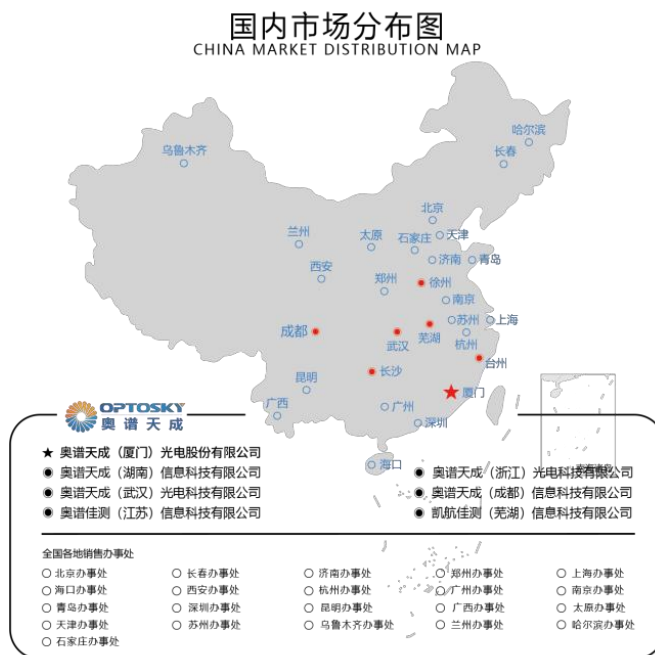
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