

Handheld Hair Drug Analyzer

GA500Pro

Features:

- Advanced technology: rare earth luminescence technology
- Fingerprint recognition: Added fingerprint recognition function, which can be switched by multiple users
- Detection method: single channel, support multiple tests on one card
- Fast detection: It only takes 10s, and the card will be automatically ejected after the test is completed.
- High sensitivity: the lowest detectable drug content of 0.2ng/mg
- Long traceability period: hair can be used to detect whether there are drugs in the body of a suspicious person within 3-6 months at the longest.
- Dual cameras: 8 million front and 13 million rear.
- Result transmission :USB/WIFI/Bluetooth/4G transmission.
- On-site inspection: 5.5-inch touch screen, 750g, built-in high-definition camera and ID card reading device, with thermal printer.
- System upgrade: Smart Android system, only need simple training for inspectors to start working.

Application

- Research laboratory
- Frontier inspection
- Community medical point
- Driving school drug testing
- Public security anti-narcotics, forensic and other departments

Description:

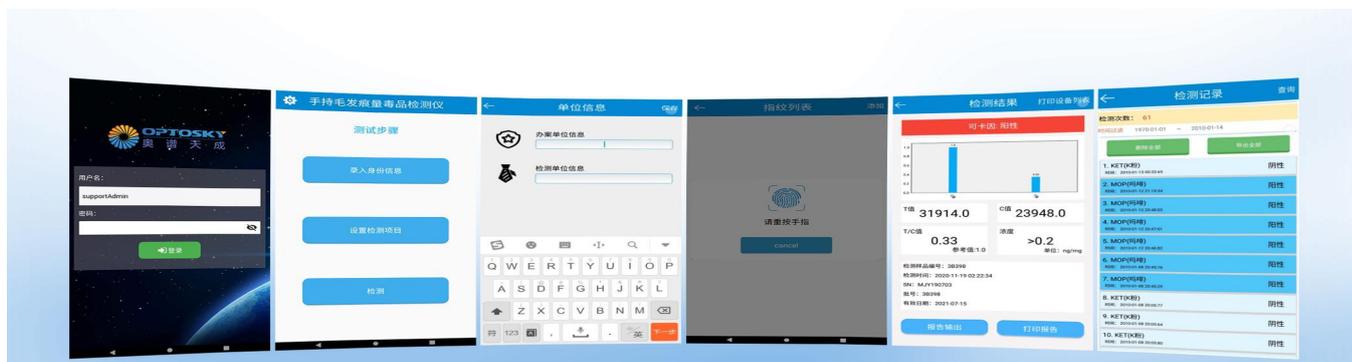
Hair faithfully records what happened in the body. In other words, as long as the hair is long enough, the hair can reflect the drug use of the owner!

GA500Pro based on the photoelectric detection principle. It needs to be used with a special fluorescent immunological reagent, which can easily generate rapid and accurate detection results of mant kinds of drugs in not more than 10m min, to meet the needs of qualitative and quantitative analysis.

GA500Pro, with built-in high-definition camera and ID card reading module, can take pictures and verify the identity of drug addicts on the spot. The device has a built-in 5200 mAh battery, which can be used for one day after 1-2 hours of full charge. It comes with a thermal printer, which can print the results on site as the basis for on-site inspection and disposal.verification. The device has a built-in 5200mAh battery, 1-2h

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Model	Description
GA500	With ID card reading function
GA500-3	Triple card special equipment
GA500BT	Supports single card/triple card
GA500Pro	Android system, fingerprint recognition, support single card/triple card



1. Background:

With the accelerated development of globalization and society, drug crimes in China are showing a trend of high incidence and abuse. Relevant state departments attach great importance to anti-drug scientific research. Among them, improving drug detection technology has become an important part of anti-drug scientific research. During the anti-drug scene, the suspect did not cooperate with the detection, making it difficult for the police to obtain bodily fluids for drug detection. In order to solve the various disadvantages of the current public security anti-drug policemen's urine and saliva testing methods for drug addicts, and accurately serve the needs of actual anti-drug combat, use it in actual combat, and be close to actual combat work, the Ministry of Public Security issued the "Standards for Testing Hair Samples of Drug-Related Personnel", Put forward the requirements for the extraction, storage, inspection and testing of hair samples of drug-related personnel. According to this requirement, Optosky developed the GA500Pro handheld hair drug detector. At present, the product has obtained the product inspection report issued by the Safety and Police Electronic Product Quality Inspection Center of the Ministry of Public Security. The hair drug detection system has obtained the software copyright, software products and the scientific and technological novelty inspection report issued by the provincial science and technology department.

2. Advantages of hair detection:

In order to accurately determine whether drug addicts have taken drugs, what kind of drugs they have taken, and whether there are still drug residues in the body of drug addicts, the application of various drug detection technologies has become an important part of anti-drug scientific research. At present, the main test objects are: hair drug test, blood test, urine test and saliva test.

	Urine	Saliva	Blood	Hair
Difficulty of obtaining materials	Easy	Easy	Difficult	Easy
Sample Storage Requirements	High	High	High	Low
Ease of sample adulteration	Easy	Difficult	Difficult	Difficult
Sample susceptibility to contamination	Low	High	Low	Low
Timeliness of detection	2-3 days	1-2 days	24h	2 weeks to 6 months after taking drugs

Table 1 Comparison of various detection methods

Hair drug trace detection technology also has unique advantages, including long detection time limit, comprehensive drug or drug abuse information, anti-corruption samples, easy collection, easy storage, and repeatable sampling, etc. Among them, the long detection time limit is the most prominent advantage. According to the hair length, it can reflect the drug use situation of several weeks to several months, and the longest drug abuse history can reach 3-6 months. Combined with urine detection technology, it can be more comprehensive. Evaluate the drug abuse situation of the subjects to meet the needs of drug control and rehabilitation work.

3. Technical principle

Time-resolved fluorescence analysis (TRFIA) is developed on the basis of fluorescence analysis (FIA), which is a special kind of fluorescence analysis. It uses lanthanides to label antigens or antibodies. According to the luminescent characteristics of lanthanide chelates, it uses time-resolved technology to measure fluorescence, and simultaneously detects two parameters of wavelength and time for signal resolution, which can effectively eliminate the interference of non-specific fluorescence. Greatly improved analytical sensitivity.

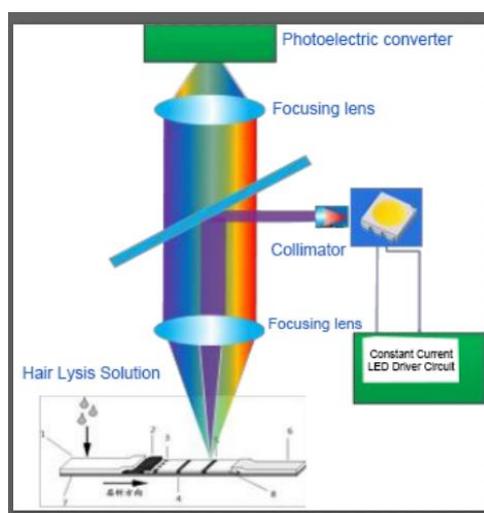


Figure1.GA500 Schematic

GA500Pro hair drug detection instrument uses time-resolved fluorescence analysis method. When detecting, when the analyte in the sample forms an immune complex with the fluorescently labeled antibody, and undergoes chromatography, it is respectively solidified on the dry fluorescent immunoassay reagent card. In the detection area and the control area. The excitation light source irradiates the detection area and the quality control area of the well-reacted reagent card, which excites the solidified fluorescent complex to emit fluorescence, which is detected and converted into current by the photodiode. The magnitude of the current is proportional to the intensity of the fluorescence.

The hand-held hair toxic trace detector automatically calculates the concentration of the sample to be tested by analyzing the strength of the current. The GA500PRO instrument has the characteristics of high detection accuracy, strong stability, fast detection speed, and rich test attachment. The detection can be completed within 10 minutes to easily meet the needs of qualitative quantitative analysis and scientific research on prohibited drugs.

4. Detection process:

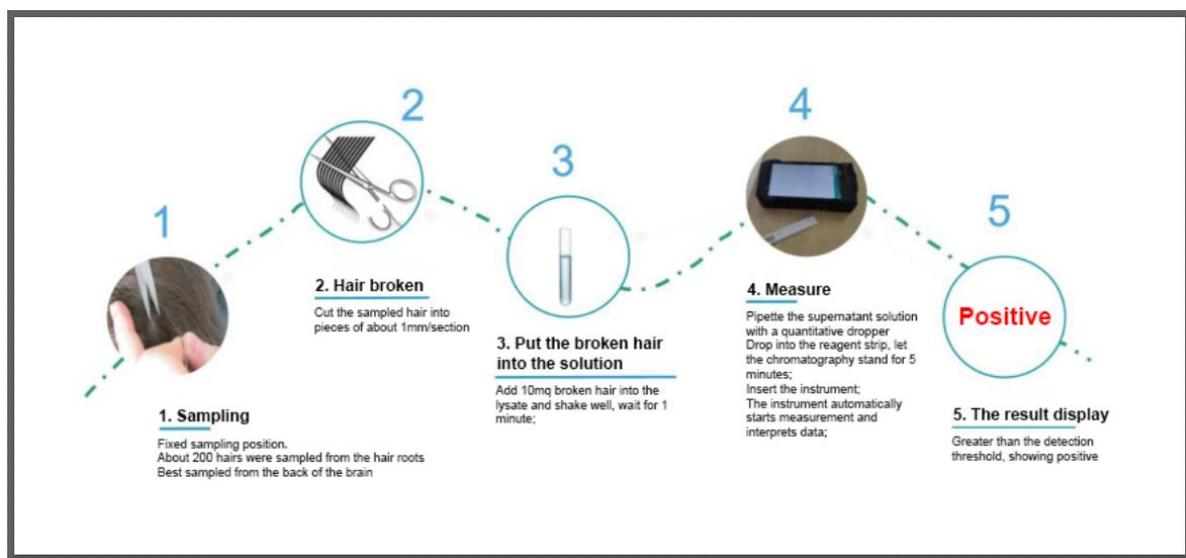


Figure 2 GA500Pro detection process

5. Compared with other detection methods:

	Chromatography	ELISA	Colloidal gold method	Fluorescence analysis
Detection time	2 hours	2 hours	5-10 minutes	5-10 minutes
Sensitivity	High	Low	Low	High
Operation steps	complex	complex	simple	simple
Specificity	High	High	Low	High
On-site inspection	Impossible	Impossible	Achievable	Achievable

6. Outlook of the instrument



1. 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

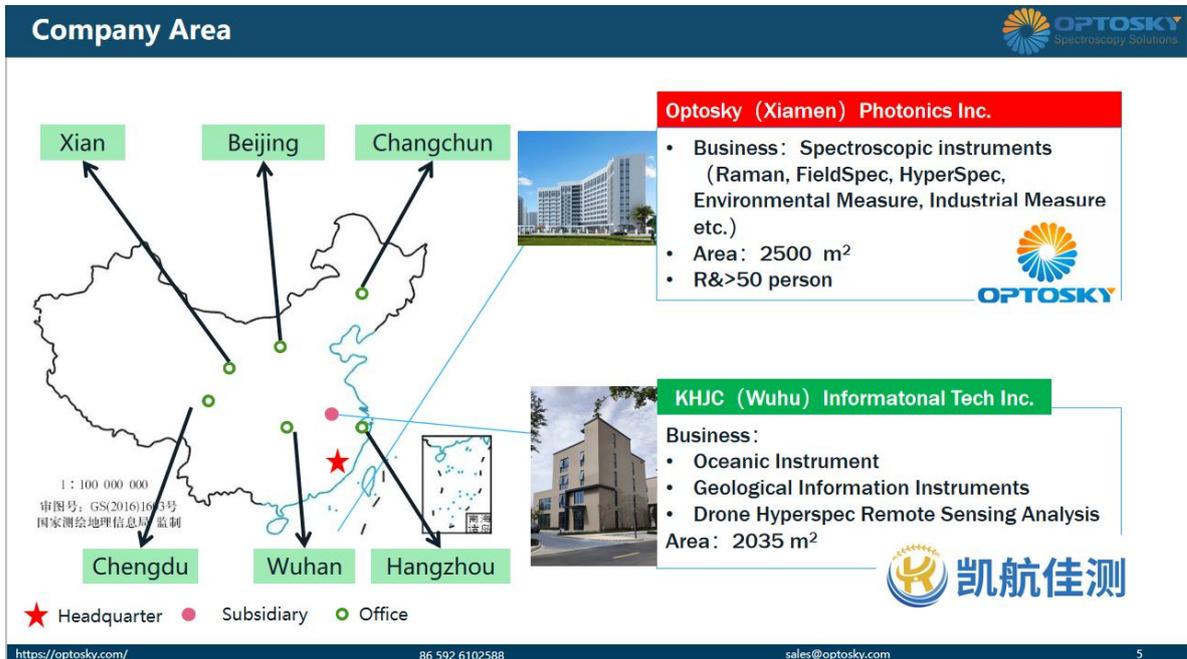


Figure 2 Optosky Company Area

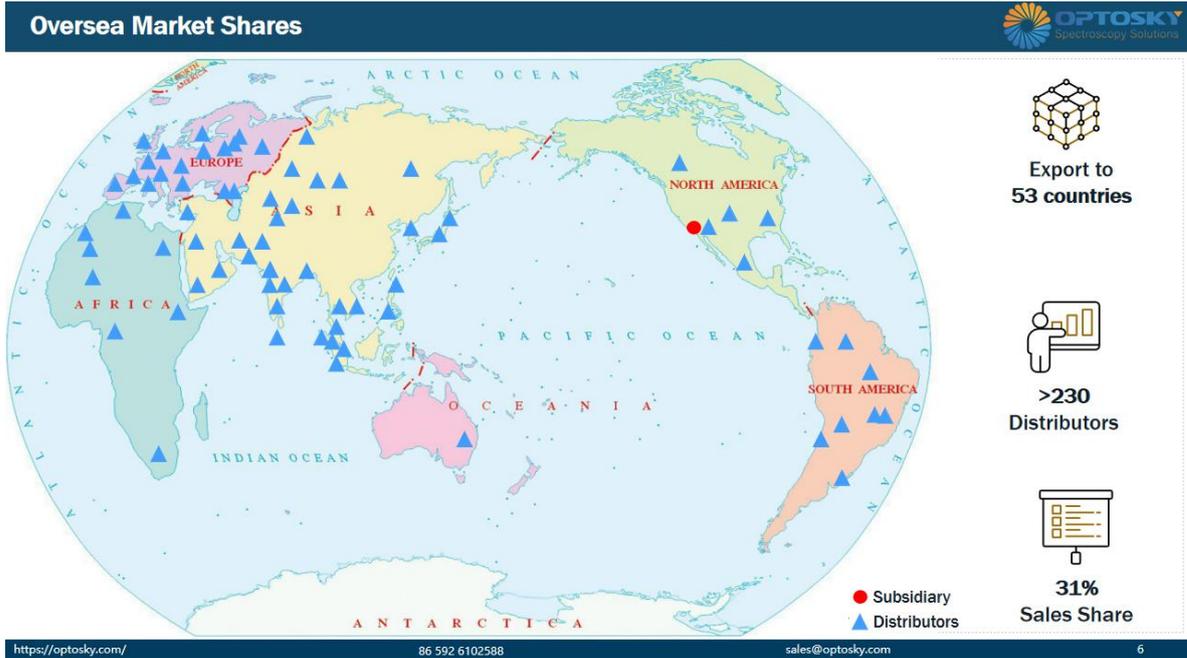


Figure 3 Overseas Market Shares



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

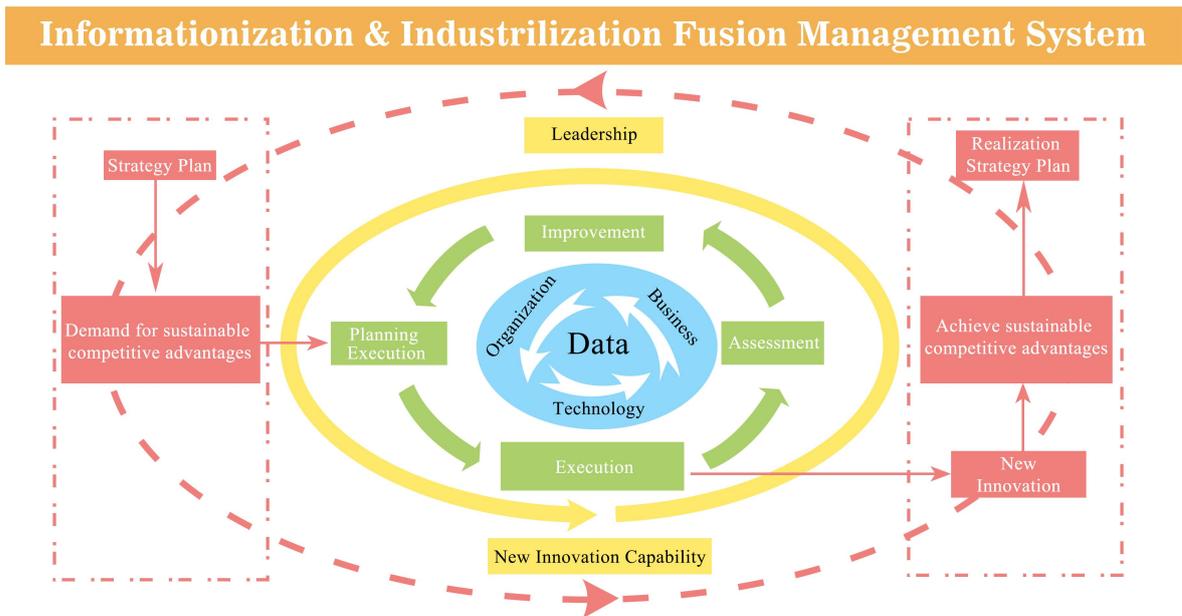


Figure 6 GB/T 23001_Informationization & Industrilization Fusion Management System

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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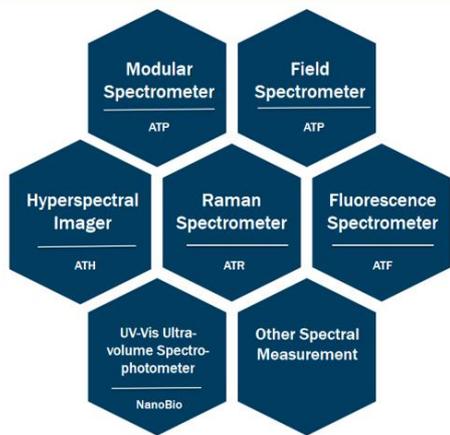
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Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

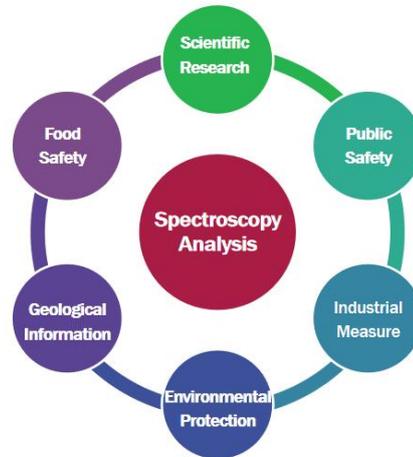
Category & Application



Category



Application



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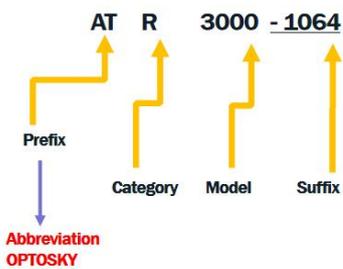
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Figure 8 Category & Application

Model Name Rule


Model Name Rule:

- Prefix
- Category
- 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