

- ✓ Rapid Alloy Identification
- ✓ No Ionizing Radiation
- ✓ Low Maintenance Cost
- ✓ Simple, Intuitive to Use
- ✓ Best for Aluminium Alloy



LASER METAL ANALYZER

Laser Induced Breakdown Spectroscopy



Optosky(Xiamen) Photonics Inc.

About Us

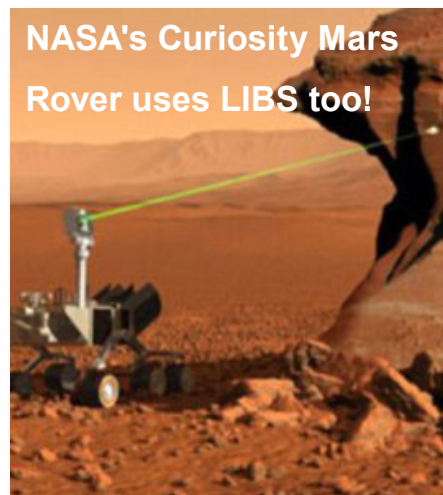


We are a high-tech startup company founded by Ph.D. from Massachusetts Institute of Technology (MIT). We focus on advancing Laser Induced Breakdown Spectroscopy (LIBS) technology and its commercialization.

We conduct original research and development in this area and own many intellectual property rights. Our first-generation, handheld LIBS analyzer was launched in China in 2018. We are committed to bring the best and the most affordable handheld LIBS technologies to our customers around the world.

Technology Introduction

Laser Induced Breakdown Spectroscopy is an elemental analysis technique with broad application in science and industry. It uses high energy, short pulse laser as the excitation source to achieve optical breakdown at material surface. As plasma cools down excess of energy is emitted optically and is sequentially collected by optical spectrometers. By analyzing the emitted optical spectrum one can obtain both qualitative and quantitative information about the material composition. Our first-generation handheld LIBS analyzers are best suited for rapid alloys identification, including, but not limited to, aluminium alloys, stainless steels, copper alloys, and nickel alloys.



Application

Material Fabrication

(Positive Material Identification, PMI)

Our handheld LIBS analyzer can rapidly verify the chemical composition of metals and alloys. It is especially powerful in measuring light elements, such as Al, Mg, Si, and aluminum and zinc alloys. It also can be used as part of QC/QA process to determine whether the material meets customer's requirements.



Metallurgy industry

Recycling metals and scraps provide metallurgy industry with crucial cost-cutting and environmental-protecting benefits.

Efficient recycling relies on efficient sorting techniques. Our handheld LIBS analyzer provides our customers with rapid on-site sorting capability with minimal sample surface preparation. Improved efficiency leads to improved profits.



Trading or Inspection

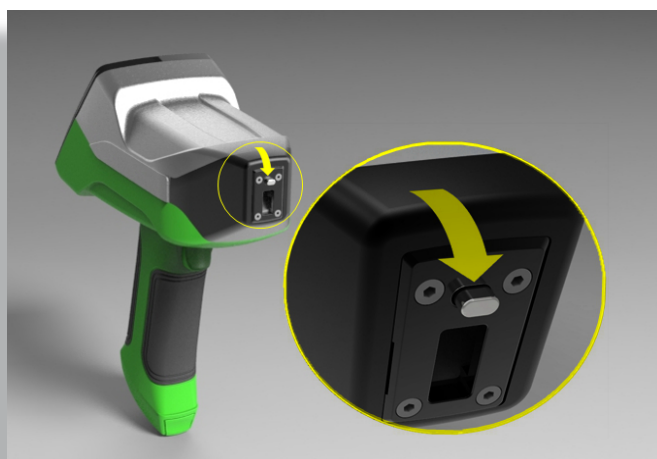
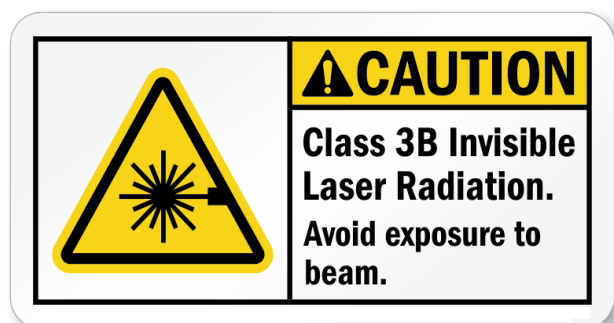
Buyers and sellers can use our handheld LIBS analyzers to ensure the material quality and grades before completing transaction to avoid costly mistakes or accepting inferior, out-of-specification materials.



Product Highlight

Class 3B Laser

The laser in our LIBS analyzer is a 1064nm, class 3B solid-state laser. No ionizing radiation hazard! It posts very little threat to human eyes when being used properly.



Laser Safety Interlock Button

The tip of our LIBS analyzer features a laser safety interlock button. It requires to be pressed to allow laser to be emitted. This prevents laser from being triggered accidentally into the open space.

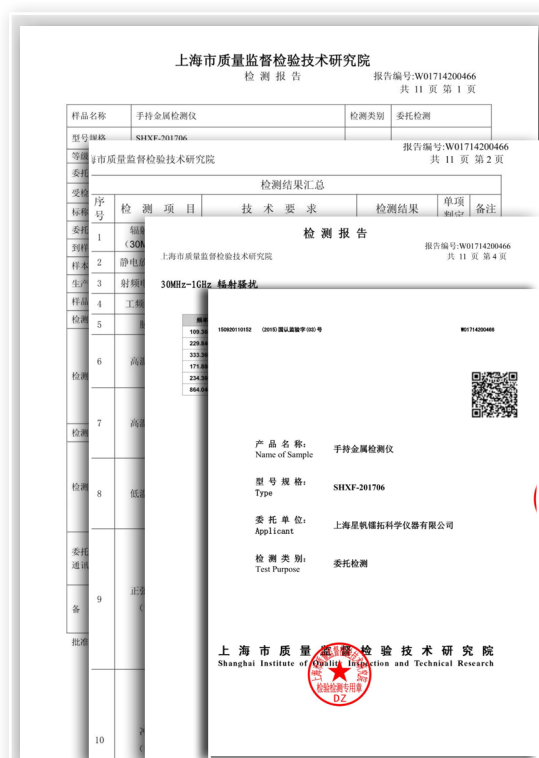
Environmental Test Certifications

Our handheld LIBS analyzers have undergone rigorous environmental testing and are certified to meet following Chinese standards:

GB/T 18268.1-2010	General Requirement
GB/T 17626.9-2011	EMI EMC
GB/T 2423.1-2008	Low Temperature
GB/T 2423.2-2008	High Temperature
GB/T 2423.10-2008	Vibration
GB/T 2423.5-1995	Impact
GB/T 2423.6-1995	Shock
GB 31241-2014	lithium-ion Battery Safety

Customizable Alloy Libraries

- ✓ Currently based on UNS system.
- ✓ Can be customized for each individual customer.



Measurable Elements

Aluminium

9.012182 4 Be Beryllium 1s ² 2s ²	24.3050 12 Mg Magnesium [Ne] 3s ²	26.98153 13 Al Aluminium [Ne] 3s ² 3p ¹	28.0855 14 Si Silicon [Ne] 3s ² 3p ²	47.867 22 Ti Titanium [Ar] 3d ² 4s ²	51.9962 24 Cr Chromium [Ar] 3d ⁵ 4s ¹	54.93804 25 Mn Manganese [Ar] 3d ⁵ 4s ²
55.845 26 Fe Iron [Ar] 3d ⁶ 4s ²	58.6934 28 Ni Nickel [Ar] 3d ⁸ 4s ²	63.546 29 Cu Copper [Ar] 3d ¹⁰ 4s ¹	65.38 30 Zn Zinc [Ar] 3d ¹⁰ 4s ²	112.411 48 Cd Cadmium [Kr] 4d ¹⁰ 5s ²	118.710 50 Sn Tin [Kr] 4d ¹⁰ 5s ² 5p ²	207.2 82 Pb Lead [Xe] 4f ¹⁴ 5d ¹⁰ 6s ² 6p ²

Stainless Steel Alloys

26.98153 13 Al Aluminium [Ne] 3s ² 3p ¹	28.0855 14 Si Silicon [Ne] 3s ² 3p ²	47.867 22 Ti Titanium [Ar] 3d ² 4s ²	50.9415 23 V Vanadium [Ar] 3d ³ 4s ²	51.9962 24 Cr Chromium [Ar] 3d ⁵ 4s ¹	54.93804 25 Mn Manganese [Ar] 3d ⁵ 4s ²	55.845 26 Fe Iron [Ar] 3d ⁶ 4s ²	58.93319 27 Co Cobalt [Ar] 3d ⁷ 4s ²	58.6934 28 Ni Nickel [Ar] 3d ⁸ 4s ²	63.546 29 Cu Copper [Ar] 3d ¹⁰ 4s ¹	92.90638 41 Nb Niobium [Kr] 4d ⁴ 5s ¹	95.96 42 Mo Molybdenum [Kr] 4d ⁵ 5s ¹	183.84 74 W Tungsten [Xe] 4f ¹⁴ 5d ⁴ 6s ²
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Copper Alloys

9.012182 4 Be Beryllium 1s ² 2s ²	26.98153 13 Al Aluminium [Ne] 3s ² 3p ¹	28.0855 14 Si Silicon [Ne] 3s ² 3p ²	51.9962 24 Cr Chromium [Ar] 3d ⁵ 4s ¹	54.93804 25 Mn Manganese [Ar] 3d ⁵ 4s ²	55.845 26 Fe Iron [Ar] 3d ⁶ 4s ²	58.6934 28 Ni Nickel [Ar] 3d ⁸ 4s ²	63.546 29 Cu Copper [Ar] 3d ¹⁰ 4s ¹	112.411 48 Cd Cadmium [Kr] 4d ¹⁰ 5s ²	118.710 50 Sn Tin [Kr] 4d ¹⁰ 5s ² 5p ²	207.2 82 Pb Lead [Xe] 4f ¹⁴ 5d ¹⁰ 6s ² 6p ²
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Advanced Industrial Design

Our handheld LIBS analyzer is IP54 certified. It does not have fragile components like the x-ray tube in handheld XRF spectrometers. It requires very low maintenance cost.

The large, top surface area is aluminum. It is sturdy, scratch-resistant, and better for heat dissipation.

The custom-made, high-capacity lithium-ion battery can usually last a full day.

Checkout other useful features below !



Specifications

	Standard	Enhanced	Custom
Stainless Steel	✓	✓	○
Wrought Aluminum	×	✓	○
Cast Aluminum	✓	✓	○
Zinc Alloys	×	✓	○
Brass	✓	✓	○
Other Copper Alloys	×	✓	○
Dimension and Weight	227*86*234 mm, ~1.25 kg (Battery including)		
Language Support	Chinese, English		
Battery Capacity	43 WH		
Working Temperature	0-40 Celcius, recommend to work between 5-35 Celcius		
Single Test Time	~1 second		
Protection Class	IP54 (GB/T 4208-2008) Certified		
WIFI	✓		
Bluetooth Printer	○		
Customizable Front Panel	○		
Warranty	One year factory warranty, Extend warranty available		

★ The table content is subject to change without notice.

- ✓ Standard
- Optional
- × Not available

Handheld LIBS vs. Handheld XRF

	Handheld LIBS	Handheld XRF
Safety	No ionizing radiation Class 3B 1064nm laser	X-ray ionizing radiation hazard Heavy regulations imposed Potential dangerous to users
Test Time	~1 second	~3-60 seconds
Maintenance	No fragile components. Very low maintenance cost	X-ray tubing, X-ray detector are both easily consumed products, very costly to replace
Applicable Elements	Almost all elements including Be, Al Mg, Si	Best for Heavy Elements; Poor Performance for Al, Mg, Si; Not applicable for Li, Be, C

Our handheld LIBS analyzer is suitable for rapid materials identification. LIBS technology is a superior technology for aluminum alloy testing. It is free of X-ray's ionizing radiation hazard and requires very low maintenance cost. Our LIBS analyzer provides a high performance, low-cost solution for many customers and is backed by industrial standard, one-year factory warranty on the entire analyzer. We can also provide our customer backup analyzer while customer's unit is in warranty repair.

Please email to : www.Optosky.net to get the latest product information.

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