

# Optical Emission Spectrometer **OES 3800i**



**FAST AND ACCURATE METAL ANALYSIS**

**EPC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES**

**Analytical Technologies Limited**

An ISO 9001 Certified Company

[www.analyticalgroup.net](http://www.analyticalgroup.net)



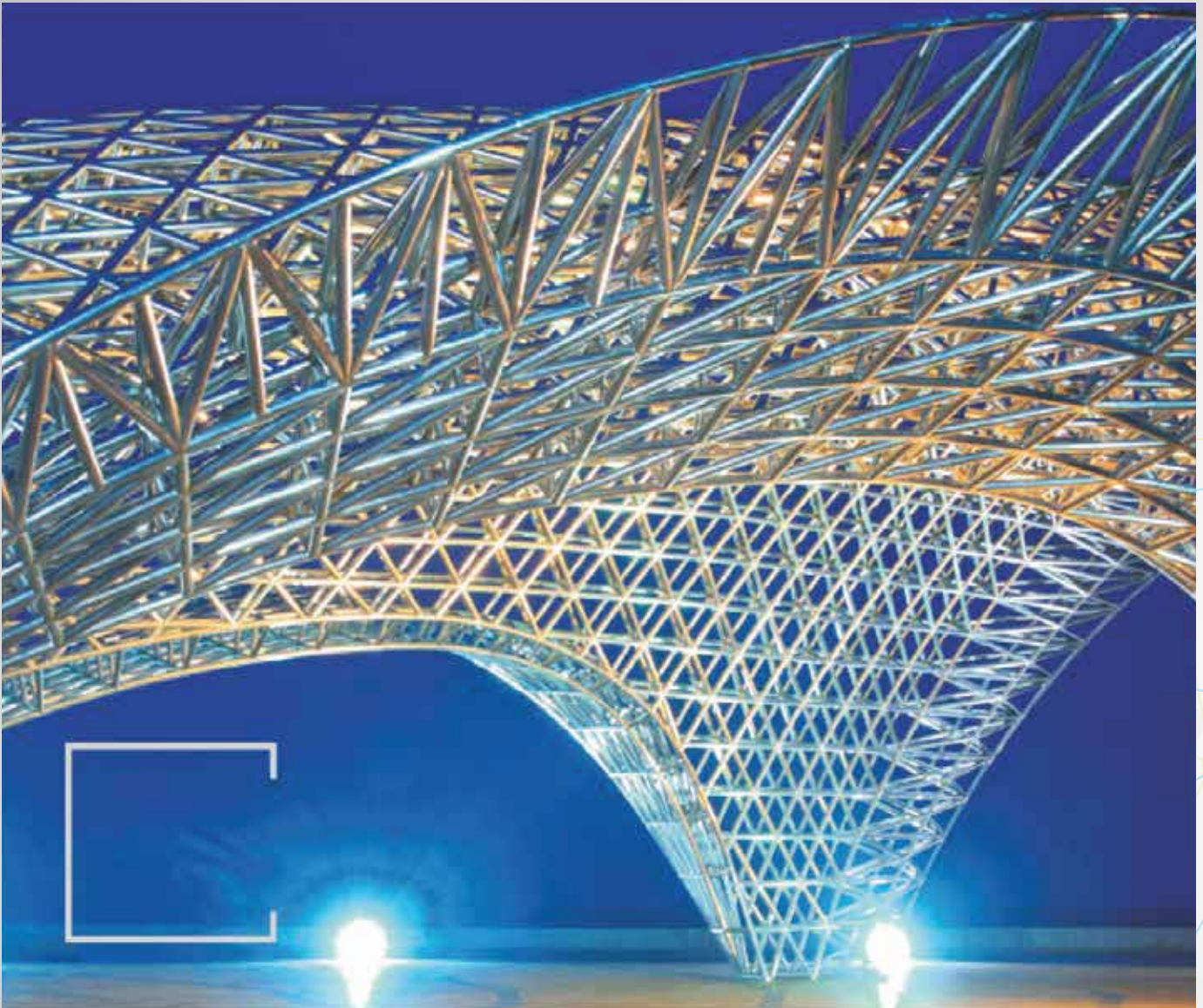
## ►► Accessories

Elemental analysis plays a crucial role in the quality control of the metal smelting, casting and processing industry.

Optical Emission Spectrometers are widely used for elemental analysis of ferrous and non-ferrous metals. OES 3800i can simultaneously analyze dozens of elements with excellent precision and fast performance, greatly benefitting operators in metal industries.

OES 3800i is the instrument of choice for companies in the metal production and processing industry, who need a cost-effective and compact optical emission spectrometer.





### ►► Performance Advantages

Based on the Multi-CCD detector and total spectrum technology, OES 3800i Optical Emission Spectrometer is able to detect all the spectral lines within the wavelength range. OES 3800i Optical Emission Spectrometer features a new design which eliminates the need of a vacuum pump and vacuum sealed chamber for accurate analysis. With extended wavelength range the instrument is suitable for the complex analysis of ferrous and non-ferrous metals

- Fast analysis: 35 seconds testing
- Excellent reliability and repeatability: 24/7 operation
- High Resolution: 10 pm/pixel
- Total spectrum technology simplifies installation of new matrix or channel
- Simplified calibration procedure with the standard samples
- Safe and eco-friendly analysis without chemical reagents



## ►► Performance Advantages

### Requirements

Ambient temperature: 15-30°C

Atmospheric humidity: <70%

Power: Voltage 220V  $\pm$  5V 50Hz: single phase with protective ground

Environment free from vibration, dust, strong electromagnetic interference, strong airflow or corrosive gases

### Control Circuit Specifications

Spectrometer design

Polychromator-350mm focal length

Resolution: 10pm/pixel

Temperature controlled at  $34 \pm 0.5^\circ\text{C}$

Special casting materials reduce chamber deformation

### Grating

Holographic concave grating; 3600 l/mm

Dispersion of the first order spectrum: 1.2nm/mm

Effective wavelength range: 140-800 nm

### Detector

High-performance linear array CCD

### Analysis Time

Depend on material-typical test 35 seconds

### Auxiliary equipment

Argon - The purity is above 99.999%

AC parameter - 1 KVA stabilized power supply

Grinding machine - for high hardness metal samples similar to: Steel, Nickel alloy, etc

Lathe - for low hardness metal samples similar to: Aluminum, Copper, Zinc, Magnesium, etc

### Other Specifications

Spark Source

Digital plasma generator

High energy pre-spark (HEPS)

Frequency: 100-1000Hz

Current: 1-80A

### Spark Stand

4mm analytical gap

No Argon consumption in standby mode

### Dimension and Weight

Dimensions LxWxH: 80cm x 75cm x 45cm

Weight: 30 kg

### Electrical Power

Operation: max 1.5 kVA

Standby mode: 70VA



## ►► Testing Procedure

### Reference

The following reference standards should be used when testing with OES 3800i ISO 14284 Steel and Iron-Sampling and Preparation of Samples for the Determination of Chemical Composition

### Preparation

High hardness metal samples require grinding the surface. Typical samples include steel, Nickel, Cobalt alloy and others

Low hardness metal samples require turning the surface with the lathe. Typical samples include Aluminum, Copper, Zinc, Magnesium alloys and others

### Analysis

Place the sample on the spark stand and start the analysis with the software. The test is complete in less than 40 seconds and all the results of the customized elements are displayed. The results of the analysis can be stored in the software database or printed directly.



## ►► Test Example

### Low alloy

Elements	C	Si	Mn	P	S	Cr	Ni	Mo	Cu
Reference Value	0.499	2.140	0.798	0.029	0.021	0.974	1.970	0.830	0.303
Results	0.491	2.168	0.818	0.027	0.019	0.953	1.939	0.820	0.291
Elements	V	Ti	Al	Nb	W	B	Co	Zr	
Reference Value	0.469	0.082	0.027	0.124	1.530	0.0047	0.238	0.051	
Results	0.475	0.083	0.025	0.127	1.501	0.004	0.230	0.055	

### Stainless steel

Elements	C	Si	Mn	P	S	Cr	Ni	Mo	Cu
Reference Value	0.066	0.760	1.160	0.030	0.0091	17.490	8.230	0.205	0.355
Results	0.066	0.790	1.180	0.027	0.007	17.573	8.173	0.189	0.344
Elements	V	Ti	Al	Nb	W	Co			
Reference Value	0.061	0.006	0.014	0.011	0.021	0.099			
Results	0.059	0.007	0.018	0.010	0.029	0.094			

### Al-Si alloy

Elements	Si	Fe	Cu	Mn	Mg	Ni	Zn	Ti	Pb	Sn	Sr
Reference Value	12.64	0.212	2.070	0.540	0.753	0.066	0.216	0.042	0.074	0.021	0.062
Results	12.715	0.190	2.031	0.528	0.737	0.068	0.211	0.040	0.078	0.020	0.064

### Low alloy Aluminum

Elements	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti
Reference Value	1.280	0.432	0.522	0.234	0.911	0.340	0.030	0.091	0.028
Results	1.261	0.417	0.513	0.226	0.893	0.321	0.026	0.092	0.026

### Copper

Elements	Cu	Zn	Sn	Pb	Fe	Ni	Al	Si	Mn
Reference Value	69.6793	29.500	0.132	0.120	0.129	0.107	0.121	0.147	0.0647
Results	69.781	29.403	0.121	0.101	0.124	0.112	0.134	0.135	0.061

### Zn-Al alloy

Elements	Al	Cu	Fe	Mg	Pb	Cd	Sn
Reference Value	4.760	3.210	0.064	0.043	0.0024	0.0025	0.030
Results	4.723	3.168	0.052	0.043	0.0029	0.0021	0.026

### Mg-Al alloy

Elements	Al	Zn	Mn	Si	Fe	Cu	Ni
Reference Value	7.180	2.990	0.339	0.097	0.013	0.087	0.0045
Results	7.116	2.942	0.359	0.090	0.017	0.082	0.002

### Inconel B.S.600C

Elements	C	Mn	Si	Cr	Fe	Mo	W	Al	Ti
Reference Value	0.072	0.500	0.390	15.620	9.300	0.027	0.003	0.200	0.210
Results	0.058	0.469	0.412	15.559	9.212	0.0246	0.007	0.182	0.242
Elements	Cu	Co	Nb	V	Mg				
Reference Value	0.040	0.040	0.014	0.022	0.002				
Results	0.043	0.038	0.012	0.025	0.004				

## ►► HPLC Servicing, Validation, Trainings and Preventive Maintenance :

HPLC Servicing	:HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.
Trainings	:We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.
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Validations	:Validations :We have protocols for carrying out periodic Validations as per GLP/ GMP/U SFDA norms.
Instruments	:Instruments :We offer instruments / Renting Services Modules like pumps, detector etc. on Rent.



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Optical Emission  
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Analyzer



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Hematology  
Analyzer



Micro Plate  
Reader/Washer



URINOVA 2800  
Urine Analyzer



Total Organic  
Carbon



Fully Automated  
CLIA



NOVA Basic Semi-Auto  
Chemistry Analyzer



PCR/Gradient PCR/  
RTPCR



Blood Gas  
Analyzer



Random access Analyzer  
for immunoassay  
Proteins & clinical chemistry



Semen Analyzer



Water purification  
system



## ►► Regulatory compliances



## ►► Corporate Social Responsibility

Analytical Foundation is a Nonprofit Organization (NGO) found for the purpose of:



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2. Improving quality of life by offering YOGA Training courses, Work shops / Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds, souls and body by means of Yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

## ►► Reach us @



**Analytical<sup>®</sup>**  
Technologies Limited

HPLC Solutions   MultipleLabs   Analytical Bio-Med   Analytical Distributors   Analytical Foundation (Trust)

**Corporate & Regd. Office:**  
Analytical House, # E67 & E68,  
Ravi Park, Vasna Road, Baroda,  
Gujarat 390 015. INDIA

T: +91 265 2253620  
+91 265 2252839  
+91 265 2252370  
F: +91 265 2254395

E: [info@hplctechnologies.com](mailto:info@hplctechnologies.com)  
[info@multiplelabs.com](mailto:info@multiplelabs.com)  
[info@analyticalgroup.net](mailto:info@analyticalgroup.net)  
[info@analyticalbiomed.com](mailto:info@analyticalbiomed.com)

W: [www.ais-india.com](http://www.ais-india.com)  
[www.analycalgroup.net](http://www.analycalgroup.net)  
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