

## ATI Wah Chang Laboratory and Technical Services: Analytical Laboratory

### INTRODUCTION

For over 50 years, ATI Wah Chang's laboratory personnel have been producing high quality inorganic analytical test results. Using a diverse array of equipment and methods, the lab has consistently met and exceeded customer expectations in a variety of industries with complete client confidentiality. We have done this by adhering to the following basic traits:

- **Quality:** Our diverse staff is expert in many fields and has decades of experience. We know you expect quality results, and we provide them. Our laboratory currently holds accreditation to ISO 9001:2000, ISO 17025, Nadcap and a wide base of customers to ensure that quality.
- **Timeliness:** The ATI Wah Chang laboratory is staffed seven days a week, often 20 hours per day. This allows us to offer quick turnaround time for many analyses.
- **Service:** Our employees are among the most capable and adaptable chemists and technicians you are likely to find anywhere, and they are willing to go the extra mile for you. Our staff can develop analytical methods uniquely suited to your sample to ensure that no analyte is lost and you receive the best available service.

To speak with an expert regarding your needs or to obtain current pricing, please call us.

### PLASMA INSTRUMENTS

ATI Wah Chang's plasma instruments make us one of the most capable laboratories in the world in this area. The instruments in this group alone can analyze for more than 80 of the elements on the periodic table.

Our instruments are state-of-the-art and have a variety of capabilities among them. The varied array allows us to select the particular instrument best suited to a customer's needs. This variety also lets us minimize potential interferences, provide analytical flexibility and always ensure the highest quality results for each client.

Our experienced chemists and modern instrumentation can provide you with quality results every time. For further information and assistance with your particular needs, please contact us.

## INSTRUMENTS

### Mass Spectrometry

- Spectro Analytical Instruments Spectromass-2000
- VG PlasmaQuad II
- Thermo X-Series 2

### Optical Emission Spectrometry

- Spectro Analytical Instruments Ciros CCD
- Spectro Analytical Instruments Flame-EOP (2)
- Thermo Jarrel Ash Iris (CID detector)
- Thermo Jarrel Ash ICAP 61E Trace
- Teledyne Leeman Prodigy
- Beckman SpectraSpan VI (2)

### Atomic Absorption Spectrometry

- Thermo M-Series AAS with Graphite Furnace
- Cetac M6000 Mercury Analyzer

## INTERSTITIAL GAS ANALYSIS

The ATI Wah Chang analytical laboratory specializes in analyses for interstitial gases. We routinely analyze for oxygen, hydrogen, nitrogen, carbon and sulfur. Most of the analyses are performed on metal samples, but we are capable of analyzing other materials as well.

The number of instruments we have in our gas lab, along with the knowledge and experience of our staff and multi-shift coverage, make turnaround time for gas analyses especially low. For more information on how we can help you, please contact us.

### Instruments

- 2 LECO TC-436 oxygen and nitrogen analyzers
- 1 LECO TC-600 oxygen and nitrogen analyzer
- 2 LECO RH-404 hydrogen analyzers
- 1 LECO CS-444 carbon/sulfur analyzer
- 1 LECO CS-600 carbon/sulfur analyzer
- 2 Kjeldahl nitrogen distillation apparatus

## PARTICLE SIZE ANALYSIS

ATI Wah Chang's laboratory has several instruments devoted to determining particle size and surface area. The main instrument used for particle size measurement is the Horiba sedigraph. With the sedigraph, we can measure particle size from 0.1 to 200 microns. Of course, we have various sieves for wet and dry particle size determination as well.

The Micromeritic TriStar 3000 is an automated gas adsorption analyzer for determining the surface area of a sample. The result can tell you how many square meters one gram of sample will cover when spread one particle thick.

We are also able to perform tap density and Scott density tests. These measure the volume of sample—either compacted or non-compacted — able to fill a given area.

## RADIOLOGICAL TESTING

### **Gamma Ray Spectroscopy**

Gamma ray spectrometry is the best technique for identifying and quantifying radionuclides. ATI Wah Chang's ultra-pure germanium detector, coupled with a computer-based data-acquisition and processing system, provides a powerful base for automated radionuclide identification and environmental monitoring applications. Examples of such services are the analysis of radium in water (with a detection limit of 10 picocuries/liter with a four liter sample) and the determination of radionuclides in environmental samples.

## SCANNING ELECTRON MICROSCOPY

ATI Wah Chang's Scanning Electron Microscope (SEM) produces highly magnified images of surface morphology. Its extremely high depth of focus generates more of a three-dimensional effect than is possible with light or transmission electron microscopes.

We can use the SEM to look at sample sizes from microscopic to ?" thick at magnifications ranging from 10x to 100,000x. By using an energy-dispersive x-ray micro-analysis system, we can perform qualitative and semi-quantitative analyses for the study of many different structural characteristics. Examples include analysis of metal fractures, particle size and size distribution, physical microstructure observation and image analysis.

Our experienced chemists and modern instrumentation can provide you with quality results every time. For further information and assistance with your particular analytical needs, please contact us.

**MAJOR ANALYTICAL LABORATORY INSTRUMENTATION**

<b>Table 1. Plasma Instrumentation</b>			
No.	Instrument	Manufacturer	Model No.
3	Direct Current Plasma Optical Emission Spectrometer(DCP-OES)	Beckman	Spectra Span VI (2)
		Thermo Jarrel Ash	Iris
3	Inductively Coupled Plasma Mass Spectrometer (ICP-MS)	VG	PlasmaQuad
		Perkin-Elmer Sciex	Elan DRC II
		Thermo	X-Series 2
5	Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES)	Spectro	Ciros
		Spectro	Flame Modula
		Spectro	Flame-EOP
		Teledyne Leeman	Prodigy
		Thermo Jarrel Ash	ICAP 61E Trace

<b>Table 2. Interstitial Gas Instrumentation</b>			
No.	Instrument	Manufacturer	Model No.
2	Carbon/Sulfur Determinator	LECO	CS-444
		LECO	CS-600
2	Hydrogen Determinator	LECO	RH-404
2	Kjeldahl Nitrogen Distillation Unit	Buchi	B-324
		Buchi	K-355
3	Nitrogen/Oxygen Determinator	LECO	TC-436
		LECO	TC-600

<b>Table 3. Particle Size Instrumentation</b>			
No.	Instrument	Manufacturer	Model No.
1	Particle Size Distribution Analyzer	Horiba	CAPA-700
1	Sub-Sieve Sizer	Fisher	95
1	Surface Area Analyzer	Micromeritics	Tri Star 3000

<b>Table 4. Other Instrumentation</b>			
<b>No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>
1	Atomic Absorption Spectrophotometer (AAS) with Graphite Furnace (GFAA)	Thermo	M Series
1	Automated Titration System	Metrohm	751 Titrino
2	Differential Scanning Calorimeter (DSC)	TA Instruments	DSC 2910
		TA Instruments	DSC 2920
2	Differential Scanning Calorimeter (DTA)	TA Instruments	DSC 2920 (2)
1	Fourier Transform Infrared Spectrophotometer (FTIR)	Thermo-Nicolet	Avatar 360
2	Gamma Counting System	Canberra	High Purity Ge
1	Gas Chromatograph (GC)	Shimadzu	GC-2014
1	Ion Chromatograph (IC)	Dionex	DX-320
1	Mercury Analyzer	Cetac	M-6000A
2	Microwave Digestion System	CEM	MARS 5
2	Microwave Furnace	CEM	Air Wave 7000
1	Moisture Analyzer	Sartorius	MA-100
1	Oil & Grease Analyzer	Horizon Technologies	Speed-Vap II, Spe-Dex 1000/3000XL
1	Scanning Electron Microscope (SEM) with EDX and Image Analysis System	JEOL	JSM 6360
1	Total Organic Carbon (TOC) Analyzer	Shimadzu	TOC-V
2	Total Organic Halogen (TOX) Analyzer	Mitsubishi	TOX-10 Sigma
		Mitsubishi	TOX-100
1	UV-Visible Spectrophotometer	Milton-Roy	401

**CONTACT INFORMATION**

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