

# ISLECHEM

## Analytical Services

### **Introduction**

IsleChem Analytical Services maintains expertise in a broad range of disciplines. Some areas of special expertise include:

- Chemical characterization
- Quality assurance
- Polymer characterization
- Environmental analytical support
- Trace analysis
- Methods development
- Process analyses

### **Chemical Characterization**

The instrumentation available at IsleChem Analytical makes us uniquely qualified for characterization of unknown materials. X-ray fluorescence, X-ray diffraction, ICP and an arsenal of wet chemical and electrochemical procedures can be used for elemental characterization of an unknown. For small amounts of material, the electron microscope or the IR microscope can be used. Combinations of FTIR, NMR, GC/MS, LC/UV-VIS and LC/MS are used frequently for organic materials.

### **Trace Analysis**

A wide variety of instruments designed for trace analysis of organics or inorganics are available. These techniques range from non-destructive X-ray fluorescence analysis capable of measuring elements at ppm concentrations to specialized GC, GC/MS and LC procedures that can measure organics at ppb, ppt and even ppq concentrations. Specialized techniques such as GC/MS/MS or high resolution mass spectrometry frequently can identify and quantify trace materials without extensive cleanup procedures. Element specific procedures such as ICP and GC/AED can provide trace analyses for specific elements in complex mixtures.

### **Quality Assurance**

IsleChem Analytical is available for assuring that in-house or contracted laboratories comply with quality assurance and quality control (QA/QC) procedures as defined by EPA and state regulations. We can help evaluate lab procedures and work with and assist staff and management to make necessary corrections and changes based on audit findings. IsleChem Analytical can conduct round-robins for analysis of various customer products and can recommend QC standards for laboratory evaluations.

### **Method Development**

One of the IsleChem Analytical strong points is the development and validation of new analytical methods. Extensive knowledge of chemical products along with the ability to draw on information available from scientific and technical resources within IsleChem allows us to choose the best approach to solve a problem.

Where necessary, multiple disciplines may be used to assure the analytical results are accurate and complete. GC/MS, for instance, may be used to assure peaks in a GC method are correctly identified and free from interference. If a manufacturing plant lacks the resources to solve its analysis problems, IsleChem Analytical can develop a method and perform the necessary analyses if the project is short term, give the method to a third party to support the plant long term or aid the plant in the purchase of instrumentation. Our staff can install the method at a plant site, evaluate the performance of the method on real samples to assure accurate results and train the plant staff.



### ***Polymer Characterization***

Using techniques such as scanning electron microscopy, IR microscopy or thermal analysis IsleChem Analytical can investigate polymer surfaces. IR and solid state NMR can be used to characterize polymer resins.

### ***Process Analyses***

IsleChem Analytical evaluates existing analyzer systems for data precision and accuracy as well as speed of analysis to determine if the analyzers are meeting plant requirements. The evaluation includes the sampling systems. In instances where existing analyzers prove to be inadequate or where a new process analyzer is required, we provide the expertise to evaluate and recommend both on-line and off-line analyzers.

IsleChem Analytical is committed to making the analysis system work and to assure the proper operation and maintenance of the system. Automated GC methods have been developed for the continuous analysis of many processes.

### ***Environmental Analytical Support***

IsleChem Analytical Scientists and Field Technicians are trained in environmental sampling, analysis, data review, lab review and method development.

Analysis services are available for validating in-house or outside laboratory analyses, rush analyses, analyses with high impact for our customers or analyses that cannot be obtained elsewhere.

In addition, IsleChem is certified by the New York State Department of Health for the analysis of waste water, soils and hazardous building materials. Please visit our web site for a complete list of ELAP certified analytes.

### ***On-site Help***

Working with other IsleChem groups, IsleChem Analytical can provide help with analysis problems at plant sites. We can provide aid in sampling processes or bulk materials, troubleshooting, instrument usage or method development. If necessary, we can bring specialized instrumentation to a site for short-term projects. We also provide on-site training on new equipment.

### ***IsleChem Analytical - Major Instrumentation***

Atomic-absorption spectroscopy (AAS)

Water Titration

Differential Scanning Calorimetry (DSC)

Fourier Transformed Infra-Red Spectroscopy (FTIR)

Gas Chromatography/Mass spectroscopy (GC/MS)

High-Performance Liquid Chromatography (HPLC)

Ion Chromatography (IC)

Metallography

Nuclear Magnetic Resonance (NMR)

Phase Contrast Microscopy (PCM)

Polarized Light Microscopy (PLM)

Rockwell and Micro Hardness

Thermal Gravimetric Analysis (TGA)

Total Organic Carbon Analysis (TOC)

X-ray Fluorescence (XRF)

X-ray Diffraction (XRD)

High-Performance Liquid Chromatography/Mass spectroscopy (LC/MS)

Scanning Electron Microscope with Energy Dispersive X-ray Spectrometer (SEM/EDS)

Inductively Coupled Argon Plasma - Atomic Emission Spectroscopy (ICP-AES)

Transmission Electron Microscope with Energy Dispersive X-ray Spectrometer (TEM/EDS)



In addition to Analytical Services, IsleChem offers:

**Contract R&D**

**Process Scale Up**

**Materials Testing**

**Analysis of Hazardous Building Materials**

**Contract Manufacturing**

**Technical Service**

**Environmental Services**

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