

Enthalpy Analytical-FTIR Spectroscopy Services

Enthalpy Analytical is a nationally accredited and leading provider of comprehensive analytical solutions. With more than 200 chemists, biologists and technicians, the company boasts the deepest talent pool in the industry. Our nationwide network of labs offers comprehensive testing services that are timely and reliable. With unparalleled geographic reach and professionals at the leading edge of testing methods, Enthalpy Analytical partners with client companies to protect air, soil and water, ensuring a clean environment for future generations.

Enthalpy Analytical has provided unparalleled field and laboratory FTIR services out of the Research Triangle Park office since 1998. Enthalpy's FTIR directory, Grant Plummer is nationally recognized for developing FTIR technology and EPA methods. He is responsible for training Enthalpy staff to generate consistently accurate and defensible data and ensuring consistency from test to test.

The Benefits of FTIR vs. Traditional Analytical Techniques

FTIR is a powerful analytical technique that can simultaneously identify and quantify both organic and inorganic compounds in complex gaseous mixtures by measuring the unique infrared absorbance of each molecular structure in the gas-phase. The resulting absorbance spectra are then compared to reference (laboratory) spectra for identification or to quantify specific compounds of interest. The only molecular species that do not exhibit such infrared absorption patterns are the homonuclear diatomics (e.g. N₂, O₂, F₂, and C₁₂). Some of the benefits of FTIR to traditional analytical techniques are:

- **Improved Efficiency**
With FTIR, an investigator can simultaneously measure combinations of acid gasses, HAPs, VOCs and criteria pollutants that would otherwise require three or more test methods.
- **Quick Results**
Data is provided in near-real-time, facilitating process optimization and monitoring for sources with quickly changing emissions.
- **Increased Sensitivity and Range**
Our laboratory-grade analyzers are effective from percent concentrations to low ppm levels for most compounds and to ppb levels for many analytes and matrices. FTIR instruments can handle wide concentration swings without recalibration.
- **Data Available For Future Investigations**
FTIR data may be revisited in the future to identify and quantify additional or previously unconsidered targets.

FTIR Services

- Compliance testing for stationary sources
- Pre-testing for MACT/control device optimization
- Engineering and process optimization
- Material off-gassing characterizations
- Pharmaceutical products/API Testing
- FTIR spectra generation and data review
- Innovative applications for challenging testing situations
- Consulting for instrument manufacturers, regulatory agencies, military agencies, venture capital groups, and industrial clients
- Expert interpretation and application of EPA Methods 318, 320, 321, PS-15, ASTM Standard D6348, and NIOSH Analytical Method 3800
- EPA Method 301 validations for specific analytes or test matrices
- Bag and tank analysis

Gas Phase FTIR Spectroscopy

- Onsite analysis for engineering and compliance
- Reporting limits from ppbv to percent levels
- Simultaneous analysis of multiple organic and inorganic compounds
- Near-real-time results
- Suitable for stacks, vents, process and indoor air evaluations
- Adaptable to a variety of industry types and processes
- Excellent for indoor exposure, materials off-gassing evaluations
- and variable emissions sources

Selected Field Testing Experience

- Chemical manufacturers
- Pulp and paper producers
- Semiconductor manufacturers
- Tobacco processors
- Oil, coal, gas-fired boilers
- Ethanol Producers
- US Department of Defense
- Wood product formulation
- Hazardous, municipal waste incinerators
- Filter paper manufacturers
- Medical device developers
- Refineries
- Cement and lime kilns
- Waste combustors
- Pharmaceutical compound developers
- Fiberglass manufacturers
- Asphalt producers