

COMPLETE THIS FORM TO INITIATE SUPPLIER SCOUTING

MEPNN Supplier Scouting Opportunity Synopsis

*The submitting organization (ex. MEP Center, requesting company, federal/state agency) agrees to notify NIST MEP of the status of actions taken as a result of this scouting instance within 30 days after receiving a results report. Notification should be via email to scouting@nist.gov, indicating the following:

- Contact with matches identified in report complete and supply contract awarded, process complete
- Contact with matches identified in report complete and no supply contract awarded, process complete
- Contact with matches identified in report complete and supply negotiations underway, process in progress
- Contact with matches identified in report underway; supply negotiations not yet begun; process in progress
- Contact with matches identified in report not yet begun, process in progress
- Contact with matches identified in report will not occur within the next 6-months, process complete

Integrated System Thermogravimetric Analyzer

15 days

Opportunities will be posted for 30 days unless specified

Item to be Scouted

Please describe the item application/ the end use of item.* Provide the item number if applicable: (N95 Mask vs Protective Mask).

TGA-FTIR-GC/MS is the most powerful and complete approach to contaminated media characterization. The system allows capturing much information from each instrument for samples where analysis by more common methods is not practical such as biomass or quantifying PFAS in polymer blends. The system allows time-based analysis (TGA-FTIR-MS) for continuous analysis as the samples are heated in a controlled furnace or separative analysis (TGA-FTIR-GCMS) where samples are transferred to the injection block during the TGA analysis and evolved gases are then injected to the GC-MS. TGA-FTIR-GC-MS offers a unique characterization platform that provides both physical and chemical properties of the PFAS contaminated media.

2022-108

Supplier Scouting Number (NIST MEP use)

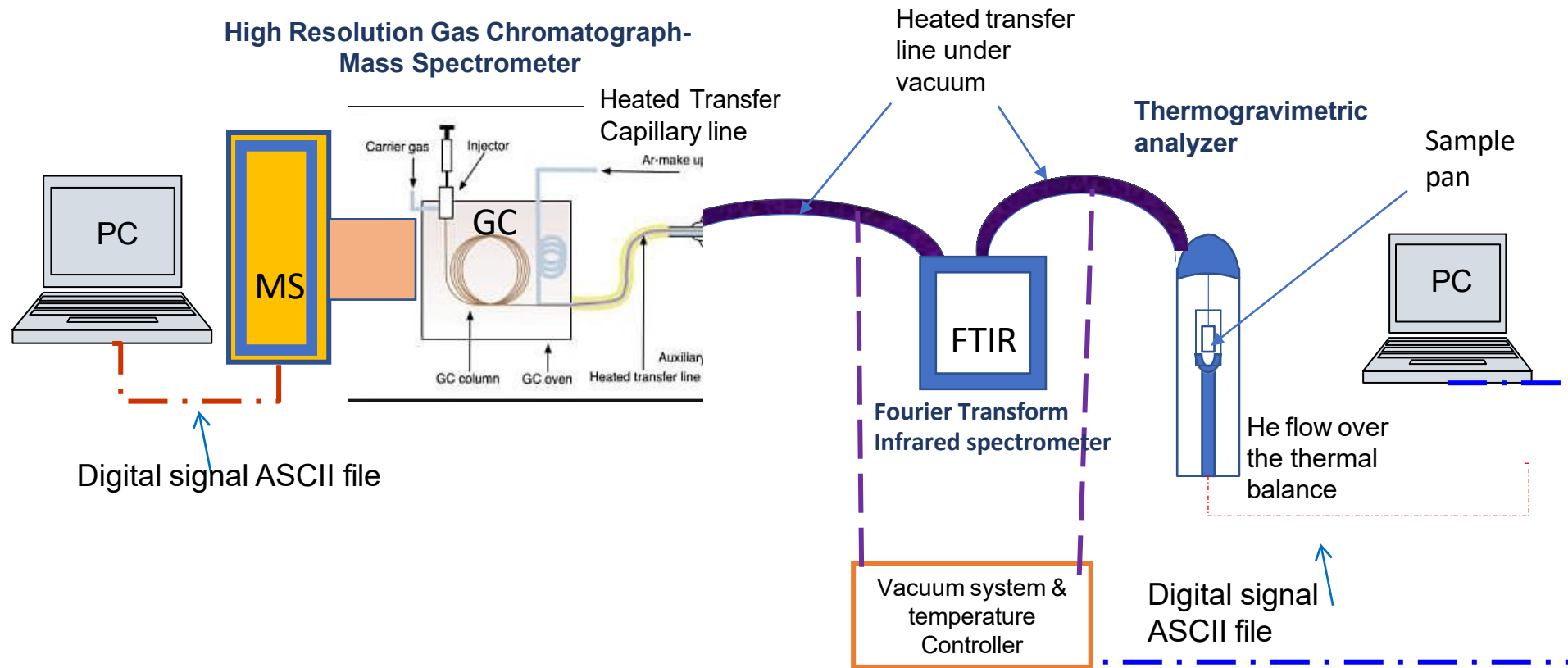
Scouting customer/product NAICS Code, if known

TECHNICAL INFORMATION:	1. Supplier Information	a. Type of supplier being sought*
		<input checked="" type="checkbox"/> Manufacturer <input type="checkbox"/> Contract Manufacturer <input type="checkbox"/> Distributor <input type="checkbox"/> Other _____
	2. Summary of Technical Specifications and Performance Requirements.	b. Reason for scouting submission*
		<input type="checkbox"/> 2nd Supplier <input type="checkbox"/> Price <input type="checkbox"/> Re-shore <input type="checkbox"/> Past supplier no longer available <input type="checkbox"/> New Product Startup <input type="checkbox"/> Other Explore potential establishment of a US (domestic) source per Executive Order 14005.
a. Describe the manufacturing processes (elaborate to provide as much detail as possible).*		
The system includes integrated system for simultaneous mass analysis, gas emission measurements consisting main high-end analytical instruments, (1) high precision thermogravimetric analyzer, (2) Fourier transfer infrared spectroscopy that is fitted with high temperature flow cell for gas phase analyzer, (3) High resolution Gas Chromatography with sample delivery system for real time emission gas analysis, (4) High resolution mass spectroscopy that are integrated through heated lines, vacuum sample delivery system and system controllers for temperature, flow, pressure, and vacuum.		
b. Provide dimensions / size / tolerances / performance specifications for the item.*		
Please see attached product depiction and description.		
c. List required materials needed to make the product, including materials of product components.*		

<p>The system consists of analytical instruments, electronics equipment, data acquisition computers, controllers with microprocessors, fused silica and stainless steel capillary tubes, vacuum pumps and stainless steel injection valve system.</p>

Requirements Specifications and Performance	d. Are there applicable certification requirements?* <input type="checkbox"/> Yes <input type="checkbox"/> No Please explain	
	Although the EPA does not require UL listing, a Nationally Recognized Testing Laboratories (NRTLs) product labeling or marking with the registered certification mark may be needed to ensure that the equipment was tested and certified for the safe use in the workplace.	
	e. Are there applicable regulations?* <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Please explain	
	The Comprehensive Procurement Guideline program is part of EPA's sustainable materials management initiative. EPA follows the U.S. General Service Administration, Federal Supply Service guideline on recycled content and energy saving.	
	f. Are there any other standards, requirements, etc.?* <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Please explain	
	Laboratory Equipment and Devices Applicable Standards: International Commission (IEC) Standards, International Organization for Standardization (ISO) Standards, and ANSI/AAMI Standards.	
	g. Additional Comments: Is there other information that would impact the item's performance or usefulness? Please explain. - This system intended to analyze an environmental sample that is heated at controlled temperature, while the emission coming from the heated sample can be analyzed with different high-end instruments for composition and quantity. The system has a fully integrated components both in hardware and software.	
BUSINESS INFORMATION:	Pricing	3a. Estimated potential business volume (i.e., # Units Per Day, Month, Year) *: EPA requires a single "entire system."
		b. Estimated target price / unit cost information (if unavailable explain) *: \$207K entire system as described in leaflet.
		4. Delivery Requirements:
	Comments:	a. When is it needed by? (Immediate, 30 Days, 6 months, etc.)* Immediate and for long term future needs.
		b. Describe packaging requirements (i.e., individually/group packaging)* <small>Laboratory Equipment and Devices Applicable Standards: International Electrotechnical Commission (IEC) Standards, International Organization for Standardization (ISO) Standards, and ANSI/AAMI Standards applicable packaging.</small>
		c. Where will this item be shipped? * US EPA/CESER/ Cincinnati/Ohio
5. Additional Is there other information you would like to include? - Vendor/company must be registered or will register in SAM.gov (https://sam.gov/content/home). - This inquiry does not guarantee award of a contract. - EPA requires a commercial off the shelf instrument that is immediately available that meets the technical specifications attached. Vendors shall provide documentation that their proposed product meets or exceeds the technical specifications attached.		

Integrated System Thermogravimetric analyzer with Fourier transform infrared Spectrometry-High Resolution Gas Chromatograph and Mass Spectrometer



Integrated Thermogravimetric – Gas Chromatographic-Mass Spectroscopic-Infrared spectrometer)TGA-FTIR-GC-MS)

The U.S. EPA intends to acquire a TGA-FTIR-GC-MS System.

The EPA would greatly prefer if this is a One Vendor sourced Solution request. This is an important feature since all instruments, parts and accessories must be manufactured, installed and serviced by the same to avoid questions of repair responsibility.

Core Specifications for the MS

- The sample introduction device, gas chromatograph, and mass spectrometer shall be purchased from, installed by and serviced by the same vendor to avoid questions of repair responsibility.
- System Sensitivity must be a minimum EI Scan: >1500:1 (RMS) of 1 pg Octafluoronaphthalene (OFN).
- Mass Spectrometer must incorporate
- Ionization Modes must have EI standard with possibility to upgrade to positive/negative CI.
- Ion Source Type • must be able to be removed directly from the front of the instrument.
- All source components must be able to be rapidly exchanged or removed with no tools
- Upon reinstallation must make all electrical connections automatically (i.e., not require manually connecting wires) and produce positive pressure which automatically seals the vacuum chambers.
- Source Operating Temperature must be settable from 50°C to 350°C.
- Filament must be of sufficient power, strength and quality that only a single filament needed to be installed in the unit.
- Ion Source and Filament Servicing must be serviceable without exposing the quadrupole assembly and detector from the vacuum chamber
- Filament and ion optics components must be replaceable without the use of tools (less than a minute under normal circumstances).
- GC Transfer line must have independent temperature control over the same range as the ion source.
- GC Flow Rate must accept GC column flow rate up to 5 mL/min using a direct capillary interface (i.e., without using an open split or jet separator interface).
- Mass Range must have an operating range of 1.0-1,200 u (amu).
- Resolution must have unit mass.
- Dynamic Range must have a linear dynamic concentration range of at least 10⁵.
- Scan Rate must be capable of acquiring and recording to disk up to 12,500 u/sec in full scan mode.
- Quadrupole pre-filter must come standard with RF-only pre-filter quadrupole rods to prevent contamination of the analytical quadrupole.
- Quadrupole must have metallic quadrupole robust enough to allow cleaning of any contaminates; thin films are not acceptable.

- Detector must utilize a discrete dynode electron multiplier with independent neutral and charged particle removal technologies (i.e., double focusing ion optics at the detector entrance and 270° flight path).
- Tuning must have autotune and user selected manual tune.
- Pumping System must come standard with a 255 L/sec (nitrogen) air-cooled turbomolecular pump with the option for liquid cooling.
- Vacuum Gauge Must come standard with a wide-range gauge capable of measuring from 75 to 10⁻⁹ torr.
- Pump-down Time must reach vacuum in less than 3 minutes and quantitative stability in less than 90 minutes.

Gas Chromatogram Specifications

- Gas Flow Control must come standard with programmable pneumatic control and the capability for 12 controlling modules.
- Inlet Configuration must be configurable to two injector ports with the following options: Split/Splitless capillary, Programmable split/splitless capillary, Programmable on-column capillary, or Packed injector.
- Inlet Usability dual injector ports must be able to be utilized sequentially without the need to reconfigure including operation with external transfer line.
- Autosampler must come standard with a 108 position, color-coded tray.
- Syringe Preload must come standard with syringe preload functionality to improve injection to injection time.
- Oven Design must come standard with twin-walled oven with concentric air intake to save time between chromatographic runs.
- Oven Performance Heating must have ability to perform nine programmable ramps with at least one oven ramp at a maximum of 140°C/min.
- Cooling must have the ability to perform ballistic cool-down such as from 450°C to 50°C in less than two minutes
- Must have the option to operate below ambient temperature (down to -99°C) using cryogenic cooling.
- Detector Configuration must be configurable to two detectors.

Data Management System

- Computer must use a computer of known make
- Operating System must run native in Microsoft Windows 7 OS
- Software Data Acquisition must be able to collect mass spectra simultaneously with up to two standard GC detector data (e.g., FID) in the same chromatogram.
- Simultaneous Scan and SIM must be able to acquire intermixed and time-overlapping full scan and SIM data for maximum sensitivity.
- Data Workflow must be able to review quantitative peak identification in a single environment. This environment must include quantitation tables, calibration curves, raw spectra, background subtracted spectra, reference spectra from the quantitative method, ion ratios plots and calculations, and peak integration display.

- MS libraries must be able to library search compounds from a chromatogram (commercially available or user generated) and use the information to construction quantitation methods.
- Reporting must have built-in reporting functionality to generate industry-standard reports with the ability to customize report templates as necessary.

Thermogravimeter Specifications

- Must operate to temperatures as high as 1200 °C at scan rates up to 500 °C/min.
- Must have a capability to operate in sub ambient temperature range.
- Balance must be environmentally controlled (temperature and inert gas).
- Must be directly controlled by PerkinElmer Pyris Thermal Analysis software.
- Standard Furnace must cool down from 1100°C to 50°C in less than 13 min.
- Must have AccuPik accessory which allows aqueous or volatile samples to be held in a sealed container vessel until just before analysis such that volatilization does not occur.
- Must have an autosampler with a capacity of at least 48 sample positions.
- Must have the ability to operate in a vacuum to 10⁻⁵ Torr.
- Must have ability to remotely monitor the instrument status using handheld iOS-based device.
- Must be able to changeover from one gas to another in less than 3 minutes.
- Must be capable of connecting directly to other analytical instruments from the same manufacturer to perform simultaneous hyphenated analytical techniques, including TG-FTIR, TG-MS, or TG-CG-MS.
- Must have a clear tube surrounding the furnace for visual observation of the sample area.
- Must have an anti-static device as an integral part of the system to eliminate the negative impact of static electricity on the sample and measurement.

Emission Transfer Line Specifications

- Must be sold, installed, and supported by one vendor.
- Must have zero gravity effect technology for FTIR gas cell.
- The transfer line and FTIR gas cell must have temperature control up to 350 oC.
- The evolved gas flow rate must be controlled by a dedicated pump and controller, so the evolved gas is not pushed into the transfer line by itself.
- FTIR must have automatic accessory (such as gas cell and ATR) detection and parameter setting.
- Must have option of direct to MS column or sample collection loops for GC analysis.
- Must have automatic data collection trigger between instruments, TGA, FTIR and GCMS.
- Must Have web server controls of the hyphenated system.
- Must have temperature ramp function, to start the system with all temperature zones at initial temperature, then ramp to a higher final temperature step.

Fourier Transfer Mid-IR Single Source MIR (+ Performance Pack

- I. Spectrometer Design
- The manufacturer must have ISO 9001 certification for the design, manufacture, and service of the FTIR instrument.
- The spectrometer must utilize a rotary interferometer providing inherent immunity to mirror tilt and shear and require no scanning mirror dynamic alignment. Dynamically aligned

interferometers are not acceptable due to their inherent poor parallelism and lack of stability, and corner cube designs are not acceptable due to their inherent alignment complexity.

- The system must share a common optical design and sampling accessories with the vendor's research and multi-range MIR and NIR systems.
- Instrument must offer an integrated methane gas cell to ensure high instrument-to-instrument stability and line-shape calibration technology.
- The system must be a sealed and desiccated optical unit with a temperature-stabilized DTGS detector enabling a scan range of 8,300-350 cm^{-1} whilst delivering 0.4 cm^{-1} resolution and 15,000:1 peak-peak noise (>50,000:1 RMS) for 5 second scan and a wavelength accuracy at least $\pm 0.02 \text{cm}^{-1}$ at 2000 cm^{-1}
- The system must incorporate a vibration isolated baseplate
- The system must incorporate kinematically mounted, zero alignment optics. Kinematic in this context means that the component mounts precisely and unambiguously with zero play in its location Pinned-in-place optics are not as precise and may have free play in the location and are more susceptible to thermal effect and are therefore not acceptable.
- The mid -IR source must be pre-aligned and incorporate electronic stabilization. Stabilization must change the polarity through the source frequently to give the system higher sensitivity and increased performance.
- Without stabilization, the hot-spot can move out of the field of view of the optical system. Although the source is still apparently working, the energy seen by the detector drops radically. Changes in the energy uniformity will cause the instrument's wavenumber scale to drift and the source to require replacement prematurely.
- The source must be user replaceable to help maintain a lower cost of ownership.
- The system must include a continuously variable J-stop that is fully software controlled which provides the highest measurement accuracy and optimal throughput at intermediate resolutions, not just vendor determined resolutions.
- The system must include a 7-position automated optical filter wheel containing traceable validation materials to allow instrument performance verification on the Mid spectral regions.
- The system must include a multi-layer potassium bromide beamsplitter for the Mid-IR spectral region.
- The system must utilize high reflectivity, gold coated reflecting optics incorporating low angle off-axis design for optimal throughput.
- The system must be configurable for other detector options including a liquid nitrogen cooled MCT.
- The system must include a humidity indicator.
- The system must include the option of HeNe or diode reference laser
- The system must offer a large sample area providing plug-and-go capabilities for a wide range of Mid sampling accessories
- The system must be compatible with all existing (for current PKI customer) and/or third party commercially available Mid sampling accessories.
- A large range of sampling accessories provides the flexibility to measure almost any solid, liquid, powder or paste across the Mid-IR spectral range.
- For existing customers: the ability to maintain our current set of accessories will save significant time and money on the initial purchase, training, start-up, and method development.

- For new customers: the ability to use a wide variety of accessories either from the instrument manufacturer or a third part accessory vendor will provide maximum flexibility of the system while still offering the flexibility to shop around for additional accessories.
- This allows reliable transfer of methods, reduced instrumentation costs, and reduced training costs at sites where only a dedicated instrument would be needed.