Notice ID Number: NIST-SS26-CHIPS-13

Title: Sources Sought Notice for Mid-IR Optical Frequency Comb

Department of Commerce Advanced Acquisition Planning (AAP) Entry Number: **51138**

The purpose of this sources sought notice is to conduct market research and identify potential sources of commercial products/services that satisfy the Government's anticipated needs.

BACKGROUND

The National Institute of Standards and Technology (NIST) will conduct the measurement science, or metrology, critical to the development of new materials, packaging, and production methods in chip manufacturing. The CHIPS Metrology Program includes research in Grand Challenge 1, Metrology for Materials Purity, Properties and Provenance. To address this Grand Challenge, the project Optical Impurity Analysis of Semiconductor Gases for Enhanced Quality Systems seeks to purchase Optical Frequency Comb Systems, quantity three (2), to perform broadband spectroscopy in support of spectral reference databases with tens of thousands of users, as well as enable new laser diagnostics for complex semiconductor processes.

Additionally, the heat signatures of objects large and small, as well as the spectral signatures of the gas species between a heat source and the observer, are critical pieces of information for the space, defense, and satellite industries. These industries require innovative optical technology and metrology to support mission reliability and to establish traceability and calibration procedures for infrared spectroradiometry at wavelengths beyond 15 μm.

NIST aims to address a critical gap in spectroradiometry and molecular spectroscopy, namely the long-wave infrared wavelength range from 5 μm to 100 μm. To do so, NIST seeks an Optical Frequency Comb System, quantity one (1), to perform broadband spectroscopy and spectroradiometer calibrations to enable improved reliability and growth in the space, defense, and satellite industries.

To improve and enable laser diagnostics in the semiconductor research and development space, spectral reference data is required to enable the quantitative detection of trace species in gases, plasmas, and at interfaces. The acquisition of spectral reference data benefits from laser sources with broad spectral coverage and intrinsic frequency accuracy. Additionally, broadband spectroradiometry in the long-wave infrared requires accurate optical frequencies to be delivered to test newly designed dispersive spectrometers using light sources with high spectral brightness and excellent spatial and temporal coherence. Therefore, we require Optical Frequency Comb Systems to interrogate gas samples, generate broadband spectral reference data of numerous molecular species, and evaluate dispersive spectrometer performance and establish traceable calibration protocols. This requires frequency comb laser sources in the infrared wavelength region, including the mid-wave infrared (approximately 2.6 μm to 5 μm) and far-wave infrared (approximately 5 μm to >15 μm).

These projects are led by the Chemical Sciences Division of the NIST Material Measurement Laboratory, the nation's premier metrology laboratory for measurement science, standards, technology, and data in the area of chemical sciences. In total, these projects seek Optical Frequency Comb Systems, quantity three (3).

NIST is seeking information from sources that may be capable of providing a solution that will achieve the objectives described above.

HOW TO RESPOND TO THIS NOTICE

In responding to this notice, please DO NOT PROVIDE PROPRIETARY INFORMATION. Please include only the following information, readable in either Microsoft Word 365, Microsoft Excel 365, or .pdf format, in the response: Submit the response by email to the Primary Point of Contact and, if specified, to the Secondary Point of Contact listed in this notice as soon as possible, and preferably before the closing date and time of this notice. Please note that to be considered for award under any official solicitation, the entity must be registered and "active" in SAM at the time of solicitation response.

- Provide the complete name of your company, address, name of contact for follow-up questions, their email, their phone number and, if your company has an active registration in https://sam.gov, your company's Unique Entity ID (UEI).

- Identify the equipment that your company sells that can meet the objectives addressed in the BACKGROUND section of this notice. For each product recommended to meet the Government's requirement, provide the following:
    - Manufacturer name
    - Model number
    - Technical specifications
    - If your company is not the manufacturer, provide information on your company's status as an authorized reseller of the product(s)

- Describe performance capabilities of the product(s) your company recommends to meet the Government's requirements. Additionally, if there are other features or functions that you believe would assist NIST in meeting its objectives described above, please discuss in your response.
    - Discuss whether the equipment that your company sells and which you describe in your response to this notice may be customized to specifications and indicate any limits to customization.

- Identify any aspects of the NIST market research notice, including instructions, and draft minimum specifications in the BACKGROUND section you cannot meet and state why. Please offer suggestions for how the market research notice and draft minimum specifications could be made more competitive.

- State whether the proposed equipment is manufactured in the United States and, if not, state the name of the country where the equipment is manufactured.

- Identify any plans/possibilities for changes in manufacturing location of the aforementioned equipment and provide relevant details, including timeline.

- For the NAICS code listed in this notice:

- Indicate whether your company is (a) a small business or (b) other than small business. See the Table of Small Business Size Standards and the associated .pdf download file for small business size standards and additional information.

- If you believe the NAICS code listed in this notice is not the best NAICS code for the type of product addressed in this notice, identify an alternative NAICS code that you believe would be more appropriate for the planned procurement.

- Describe services that are available with the purchase of the aforementioned equipment from your company such as installation, training, and equipment maintenance.

- Describe standard terms and conditions of sale offered by your company for the recommended equipment such as: delivery time after your company accepts the order; FOB shipping terms; manufacturer warranty (including details regarding nature and duration); if available, description(s) of available extended warranty; equipment setup and test; operator and service instruction manual(s); cleanup after installation; and if applicable, other offered services. Provide a copy of manufacturer standard terms and conditions that typically relate to the sale of the specified equipment, if available.

- State whether your company offers facility renovation services related to installation of the recommended equipment at its delivery destination, if required per the NIST-identified minimum specifications, and provide description of said services. Indicate if your company performs the facility renovation services or typically subcontracts the work to another company. Indicate if your company would be interested in inspecting the intended installation site during the market research phase.

- State published price, discount, or rebate arrangements for recommended equipment and/or provide link to access company's published prices for equipment and services.

- If the recommended equipment and related services are available for purchase on any existing Federal Supply Schedule contract(s) or other contracts against which NIST may be able to place orders, identify the contract number(s) and other relevant information.

- Identify any customers in the public or private sectors to which you provided the recommended or similar equipment. Include customer(s) information: company name, phone number, point of contact, email address.

- Provide any other information that you believe would be valuable for NIST to know as part of its market research for this requirement.

- State if you require NIST to provide additional information to improve your understanding of the government's requirement and/or would like to meet with NIST representatives to discuss the requirement and the capabilities of the identified equipment.

QUESTIONS REGARDING THIS NOTICE

Questions regarding this notice may be submitted via email to the Primary Point of Contact and the Secondary Point of Contact listed in this notice. Questions should be submitted so that they are received 5 days prior to the response date. If the Contracting Officer determines that providing a written amendment to this notice to document question(s) received would benefit

other potential respondents, the questions would be anonymized, and a written response to such question(s) would be provided via an amendment to this notice.

IMPORTANT NOTES

This notice is for market research purposes and should not be construed as a commitment by NIST to issue a solicitation or ultimately award a contract. There is no solicitation available at this time.

This notice does not obligate the Government to award a contract or otherwise pay for the information provided in response.

NIST reserves the right to use information provided by respondents for any purpose deemed necessary and legally appropriate.

Any organization responding to this notice should ensure that its response is complete and sufficiently detailed to allow the Government to determine the organization's capability.

Respondents are advised that the Government is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted.

After a review of the responses received, a synopsis and solicitation may be published on GSA's eBuy or SAM.gov. However, responses to this notice will not be considered an adequate response to any such solicitation(s).

The responses shall not exceed [*Add number of pages*] pages including all attachments, charts, etc.

Thank you for taking the time to submit a response to this request!