STATEMENT OF WORK
Title: Turbomolecular and Dry backing scroll pump (Pfeiffer BRAND NAME ONLY)
Requesting Lab: National Institute of Standards & Technology (NIST) Nanoscale Device Characterization Division (NDCD) Nanoscale Spectroscopy Group (NSG)

I. BACKGROUND INFORMATION

The Nanoscale Device Characterization Division (NDCD) develops and advances the measurement and knowledge infrastructure to characterize nano- and atom-scale engineered materials and solid-state devices for innovation in information processing, sensing, and future quantum technologies. The NDCD's technical activities span atom scale devices, nanoscale spectroscopy, advanced electronics, nanoscale processes and measurements, and alternative computing. This acquisition will allow the NDCD to expand its measurement capabilities using EUV diffractometry and Fourier ptychography. The problem being solved by this EUV metrology technique is the non-destructive 3-dimensional measurement of nanoscale periodic, non-periodic features in support of the American semiconductor industry.

To meet mission requirements, the NDCD needs to acquire a magnetically levitated turbomolecular pump with dry scroll backing pump. These pumps will be utilized on a new experimental apparatus that will harness short extreme-ultraviolet (EUV) light for the non-destructive 3-dimensional measurement of the smallest features of computer chips, their transistors. This procurement supports the CHIPS R&D Metrology Program's Grand Challenge 2 to advance metrology for future microelectronics manufacturing and project 2.07, "EUV Scatterometry." The application of these pumps is the evacuation of the end station as EUV light will only propagate in a vacuum; thus, these pumps will support accurate quantitative reconstruction of dimensional structure of periodically, non-periodically patterned features from the reflective diffraction off a sample under test

II. PURPOSE

These pumps will evacuate a large volume end station that is to house our EUV measurements technologies.

III. SCOPE

The Contractor shall deliver a quantity of one (1) Magnetically levitated turbomolecular pump, Pfeiffer Model HiPace 800 M (Part Number 2000017803) and a quantity of one (1) Dry backing scroll pump, Pfeiffer Model, HiScroll 18 "Comfort Bundle, (Part Number 2000199909) inclusive of FOB Destination delivery terms (or equivalent INCOTERMS such as DDP), and 1-year warranty.

IV. MINIMUM REQUIREMENTS

The Contractor shall submit a firm fixed price quotation for all of the line items that offers a supply/system that meets all technical specifications identified below. All items must be new. Used or remanufactured equipment will not be considered for award. Experimental, prototype, or custom items will not be considered. The use of "gray market" components are not acceptable. All line items shall be shipped in the original manufacturer's packaging and include all original documentation and software, when applicable.

BRAND NAME ONLY JUSTIFCATION

Line Item 0001:
Description: Magnetically levitated turbomolecular pump, Pfeiffer Model HiPace 800 M (Part Number 2000017803)
Quantity: 1

A. Technical Specifications

a. Maximum base pressure of system must be of 10-8 mbar

b. Must be a magnetically levitated turbopump
c. Pumping speed must be > 475 l/s (H2), needed to attain mission requirements for pump out time for a NIST chamber sized 40" x 40" x 24"
d. Must be air-cooled
e. Must have 10-inch ISO-200 inlet flange
f. Must have the ability to change rotation speed of pump in 1% increments
g. Must have a hybrid rotor design with disk blade
h. Sound pressure level must be < 50 dBA
i. Control of Turbopump electronics shall allow for automated, hybrid operation of pumping system (both scroll and turbo pump) as a plug-and-play solution using OEM parts

Line Item 0002:
Description: Dry backing scroll pump, Pfeiffer Model HiScroll 18 "Comfort Bundle, (Part Number 2000199909)
Quantity: 1

A. Technical Specifications

a. Pumping speed must be > 18 m^3/hr (air), needed to attain mission requirements for pump out time for a NIST chamber sized 40" x 40" x 24"
b. Must be Air-cooled
c. Must have KF25 inlet flange
d. Sound pressure level must be < 50 dBA
e. Shall allow for external control in automated, hybrid operation of pumping system (both scroll and turbo pump)) as a plug-and-play solution using OEM parts
f. Must have a minimum cable length of 2 m for attaching electronics to pumps

V. SCHEDULE OF DELIVERABLES

Deliverable Number	*Description*	*Quantity*	*Due Date*	*Place of Delivery*
1	**Magnetically levitated turbomolecular pump, Pfeiffer** Model HiPace 800 M (Part Number 2000017803)	**1**	**No later than 12 weeks after receipt of order.**	**NIST Gaithersburg**
2	Dry backing scroll pump, Pfeiffer Model HiScroll 18 "Comfort Bundle, (Part Number 2000199909)	1	**No later than 12 weeks after receipt of order.**	**NIST Gaithersburg**

VI. DELIVERY TERMS

Delivery shall be F.O.B Destination (or equivalent incoterms, such as DDP) and shall occur in accordance with the delivery due dates.

FOB Destination means: The contractor shall pack and mark the shipment in conformance with carrier requirements, deliver the shipment in good order and condition to the point of delivery specified in the purchase order, be responsible for any loss of and/or damage to the goods occurring before receipt and acceptance of the shipment by the consignee at the delivery point specified in the purchase order; and pay all charges to the specified point of delivery.

The contractor shall deliver all Line Items to:

National Institute of Standards and Technology
Shipping and Receiving
100 Bureau Drive, Building 301
Gaithersburg, MD 20899
C/O/ TBD 217/E116

VII. INSPECTION & ACCEPTANCE

In addition to the inspection and acceptance terms articulated in the RFO Clause 52.212-4, clause that allows the Government reserves the right to perform such performance tests and evaluations as defined below to verify specified system performance. Such tests and evaluations, if performed, shall be conducted within the environment that the system is to be operated. The Contractor has the right to be present during the tests and evaluations, if performed, at the Contractor's expense.

Performance Tests:

1. Pumps will be powered on by NIST personnel to ensure the pumps power up as required.

NIST may choose at its discretion to forego this part of acceptance testing.

A visual inspection of the equipment will be performed by the NIST POC to identify surface defects or any form of indication that any equipment was damaged during transport to NIST. The Government shall have sole discretion to require repair or replacement of damaged and/or nonconforming supplies at no cost to the Government. The Government at any time prior to acceptance shall reject the equipment due to defects and/or nonconformance. The vendor is responsible for latent defects discovered any time after final inspection. However, the extent of its liability shall be prorated over the useful life of the equipment.

Ownership of the equipment shall transfer to NIST upon acceptance by the Government.

The Government will test, inspect, and accept or reject the equipment within 7 working days of the receipt of the equipment unless otherwise indicated above. The Government reserves the right to conduct quality assurance testing to confirm that a given instrument(s) meets the manufacturer's and/or the Government's performance specifications. It is anticipated that the equipment will meet all manufacturer's specifications and/or the Government's performance specifications identified in the most recent operations and maintenance manual for each piece of equipment and/or in this document.

VIII. WARRANTY

The contractor shall provide a minimum of a one (1) year warranty in accordance with Revolutionary Far Overhaul (RFO) 52.212-4. Warranty shall commence upon acceptance of the pumps by the Government. If within the warranty period it is discovered the pump was designed with or had a defect not discovered during inspection, the Government reserves the right to require a replacement, not a repair.

IX. PAYMENT SCHEDULE

Advanced payment is not authorized. Invoices must be submitted in the arrears. The Contractor will be paid net-30, in accordance with the payments clause in the contract and as otherwise noted in this document, upon receipt of a proper invoice.

NOTE: Partial shipments and partial invoices will not be accepted, unless otherwise requested and accepted by the Contracting Officer prior to award offer. Proposed payment schedules shall be submitted with vendor's response to the RFQ for consideration.