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Planning

Dual growth chamber Molecular Beam Epitaxy System

UNIVERSITY OF SHEFFIELD

F01: Prior information notice
Prior information only
Notice identifier: 2024/S 000-036718
Procurement identifier (OCID): ocds-h6vhtk-04b61f
Published 13 November 2024, 1:04pm

Section I: Contracting authority

I.1) Name and addresses

UNIVERSITY OF SHEFFIELD

WESTERN BANK

SHEFFIELD

S102TN

Contact

David Middle

Email

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Telephone

+44 1142221560

Country

United Kingdom

Region code

UKE32 - Sheffield

Charity Commission (England and Wales)

X1089

Internet address(es)

Main address

https://www.sheffield.ac.uk/

Buyer's address

https://in-tendhost.co.uk/sheffield/aspx/Home

I.3) Communication

Additional information can be obtained from the above-mentioned address

I.4) Type of the contracting authority

Body governed by public law

I.5) Main activity

Education

Section II: Object

II.1) Scope of the procurement

II.1.1) Title

Dual growth chamber Molecular Beam Epitaxy System

Reference number

4354/PIN/DM/24

II.1.2) Main CPV code

- 38000000 - Laboratory, optical and precision equipments (excl. glasses)

II.1.3) Type of contract

Supplies

II.1.4) Short description

This is a PIN notice for a procurement exercise, which is likely to be published by the University of Sheffield in early 2025:

The EPSRC National Epitaxy Facility (NEF) based at the University of Sheffield has been providing bespoke semiconductor wafers to academia and industry for 45 years. It is a unique world-class centre combining technical excellence and expertise with state-of-the-art epitaxy and material characterization equipment. We are looking to further enhance our capability provision to the UK semiconductor community, by investing in a new linked dual-chamber Molecular Beam Epitaxy (MBE) System for arsenides/phosphides and arsenides/antimonides growth that is fully automated, capable of 24/7 operation, reliable, and resource-efficient allowing further expansion in the future.

NEF currently supplies epitaxy wafers to over 200 users across 28 UK Universities and industry to support UKRI grants worth over £150M. Our performance is governed by Key Performance Indicators agreed with the EPSRC and include reactor downtime. Therefore, reliability of the system is a key factor, and exemplary after sales service, equipment monitoring tools, and back-up systems are essential.

II.1.5) Estimated total value

Value excluding VAT: £5,000,000

II.1.6) Information about lots

This contract is divided into lots: Yes

The contracting authority reserves the right to award contracts combining the following lots or groups of lots:

The final number of lots is currently unknown, but it is envisaged that the MBE System will be divided into lots. Suppliers will be able to bid for single, multiple or all lots.

II.2) Description

II.2.1) Title

To be confirmed within the eventual tender exercise

Lot No

1

II.2.2) Additional CPV code(s)

- 38000000 - Laboratory, optical and precision equipments (excl. glasses)

II.2.3) Place of performance

NUTS codes

- UKE3 - South Yorkshire

Main site or place of performance

The EPSRC National Epitaxy Facility (NEF) based at the University of Sheffield

II.2.4) Description of the procurement

The System must comprise of:

1. Two vacuum-linked growth chambers with high capacity sources and high speed pumping arrangements suitable for the production of arsenide/phosphide and arsenide/antimonide materials of the highest purity.

2. Dedicated sample preparation chamber for cleaning and oxide desorption using gas

sources.

3. A separate outgassing and surface analysis chamber with an Auger Electron Spectroscopy tool.

4. Two sample entry locks, and two storage chambers.

5. Robust automated transfer system connecting entry locks, surface preparation and analysis chambers, storage chambers, and growth chambers with space for further expansion.

6. Reliable automation and control software that allows for the two growth chambers to be operated independently.

7. Low temperature (down to cryogenic) metals deposition capability (either within one of the two arsenide growth chambers or separate), and should ideally fit in a 7.2m by 4.5m footprint (excluding peripheral equipment, such as electrical racks, cryopumps and compressors, PCs, etc.).

It would be advantageous for the System to have the following additional capabilities:

a. integrated vacuum suitcase technology compatible with other UK facilities to allow transport of samples under vacuum in and out of the system.

b. integrated solutions allowing maintenance of critical components without breaking chamber vacuum

real-time data management suitable for machine learning and auto-correction of growth conditions.

We will be looking for a System with:

i. resource-efficient equipment, such as low liquid nitrogen consumption

ii. exemplary after-sales service

iii. advanced equipment monitoring and notification systems, such as power/water/vacuum loss

iv. robust back-up systems for essential supplies, such as power/water.

II.2.14) Additional information

Market Engagement: We welcome site visits or virtual meetings from potential suppliers to

discuss the System requirements during the period 18th November - 6th December 2024. Meetings and site visits must be arranged no later than 29th November. Subject to successful funding of the System, we expect the tender to be published in January 2025.

The value entered at the top of this notice at I.1 was £5,000,000, however the overall range we are considering for the budget is +/- £1m of this figure, depending on any additional features chosen.

Format: individual meetings, either on-site or virtual.

Contact to arrange meetings:

Dr Zofia Bishop by email: z.k.bishop@sheffield.ac.uk

Address for site visits:

Centre for Nanoscience and Technology, Broad Lane, Sheffield, S3 7HQ.

II.2) Description

II.2.1) Title

To be confirmed within the eventual tender exercise

Lot No

2

II.2.2) Additional CPV code(s)

- 38000000 - Laboratory, optical and precision equipments (excl. glasses)

II.2.3) Place of performance

NUTS codes

- UKE3 - South Yorkshire

Main site or place of performance

See details provided against the entry for Lot 1

II.2.4) Description of the procurement

See details provided against the entry for Lot 1

II.2.14) Additional information

See details provided against the entry for Lot 1

II.3) Estimated date of publication of contract notice

31 January 2025

Section IV. Procedure

IV.1) Description

IV.1.8) Information about the Government Procurement Agreement (GPA)

The procurement is covered by the Government Procurement Agreement: Yes