Purchase Contract

(hereafter the “**Contract”**)

1. **CONTRACTUAL PARTIES**
   1. **Fyzikální ústav AV ČR, v. v. i.** (Institute of Physics of the Czech Academy of Sciences)**,**

with registered offices at: Na Slovance 1999/2, 182 00 Praha 8, Czech Republic,

represented by: RNDr. Michael Prouza, Ph.D., Director,

registered in the Register of public research institutions of the Ministry of Education, Youth and Sports of the Czech Republic.

ID No.: 68378271

Bank: xxxxxxxxxxxxxxxxxxxxxxxx

Account No.: xxxxxxxxxxxxxxxxxxxxxxxx

(hereinafter referred to as the “**Buyer**”)

and

* 1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,**

with registered offices at: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

represented by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

registered in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

ID No.: \_\_\_\_\_\_\_\_\_\_\_\_\_

Tax ID No.: \_\_\_\_\_\_\_\_\_\_\_\_\_

Bank: \_\_\_\_\_\_\_\_\_\_\_\_\_

Account No.: IBAN: \_\_\_\_\_\_\_\_\_\_\_\_\_; SWIFT (BIC): \_\_\_\_\_\_\_\_\_\_\_\_\_ (TO BE FILLED IN BY THE BIDDER)

(hereinafter referred to as the “**Seller**”)

(the Buyer and the Seller are hereinafter jointly referred to as the “**Parties**” and each of them individually as a “**Party**”).

1. **FUNDAMENTAL PROVISIONS**
   1. The Buyer is a *Partner with a financial contribution* of the project "CzechNanoLab+" and *Beneficiary* of the project "Teraferroics for ultra-high capacity, speed and energy-efficiency of information technology" under the *Operational Programme Jan Amos Komenský* within the framework of EU funds, project registration numbers CZ.02.01.01/00/23\_015/0008200 and CZ.02.01.01/00/22\_008/0004594 (hereinafter referred to as the “**Projects**”). The subject of performance under this Contract is intended for the Projects and mainly financed from the support provided for their implementation.
   2. The Seller has been selected as the winner of a public procurement procedure announced by the Buyer in accordance with Act No. 134/2016 Coll., on Public Procurement, as amended (hereinafter the **“Act”**), for the public contract with the title **“UHV, low temperature SPM with magnetic field for Electron Spin Resonance (ESR) experiments - REISSUE”** (hereinafter the “**Procurement Procedure**”).
   3. The documentation necessary for the implementation of the subject of performance hereof consist of
      1. **Technical specifications** of the subject of performance hereof attached as **Annex No. 1** hereto**.**
      2. The Seller´s bid submitted within the Procurement Procedure in its parts which describe the subject of performance in technical detail (hereinafter the “**Seller’s Bid**”); the Sellers’s Bid forms **Annex No. 2** to this Contract and is an integral part hereof.

In the event of a conflict between the Contract and its Annex or between the Contract’s Annexes, the technical specification / requirement of the higher level / quality shall prevail.

* 1. The Seller acknowledges that it is essential for the Buyer that the Seller delivers and handovers the subject of performance within the specified time and in the specified quality as stated in Annexes No. 1 and 2 of this Contract (including invoicing). If the Seller fails to comply with the contractual requirements, the Buyer may incur damages.

1. **SUBJECT-MATTER OF THE CONTRACT** 
   1. The subject of this Contract is the Seller’s obligation to deliver and transfer into the Buyer’s ownership:

a **Scanning Probe Microscope** **s**pecified in detail in Annexes No. 1 and No. 2 hereto

(hereinafter the **“Equipment”**)

and the Buyer's obligation to accept the Equipment and to pay the Seller the purchase price as defined below.

* 1. The following activities are an integral part of the performance to be provided by the Seller:
     1. Processing of the technical design of the Equipment corresponding to the assignment, including the preparation of the relevant technical drawings, which are subject to approval by the Buyer (As a non-expert, the Buyer will primarily assess compliance with the individual points from table Tab. 1 of Annex No. 1 and the dimensions of the spatial distribution of the Equipment.);
     2. Submission of a list containing conditions which are recommended to be met at the place of performance in order to install the Equipment;
     3. Transport of the Equipment incl. all accessories specified in Annexes No. 1 and 2 hereto to the place of performance, un-packaging and control thereof;
     4. Installation of the Equipment and all components necessary to operate the Equipment including connection to installation infrastructure at the place of performance;
     5. Verification of the functionality of the Equipment after installation, performing acceptance tests, including issuing reports on its performance:
* Demonstration of the cold SPM head continuously maintaining a temperature below 150mK (more than 150h for purposes of the demonstration) without need of operator interaction with the microscope, or the duration specified by the Seller, if longer.
* Ability to achieve a base pressure lower than 6e−10 mBar after UHV bake and system cooldown in both the SPM and preparation chambers.
* Capability to prepare the surface of an Au(111) crystal.
* Demonstration of atomic resolution on the Au(111) surface in STM (Scanning Tunnelling Microscopy) mode at a head temperature below 150mK (or the base temperature specified by the Seller, if lower) and a magnetic field of 1T (or the maximal possible field magnitude specified by the Seller, if higher).
* Test measurements should also include demonstrations under the specified conditions of:
  + Z-noise max. 3 pmrms/sqrt(Hz) (or the z-noise value specified by the Seller, if lower) evaluated at a 1 kHz bandwidth, at the head temperature below 150mK (or the base temperature specified by the Seller, if lower) and magnetic field above 1T (or the maximal possible field magnitude specified by the Seller, if higher).
  + Stable scanning conditions with a tunnelling current set point I < 2 pA (or the current value specified by the Seller, if lower) for temperature below 150mK (or the base temperature specified by the Seller, if lower) and magnetic field above 1T (or the maximal possible field magnitude specified by the Seller, if higher).
  + A Seller specified scanning and coarse motion range.
    1. Delivery of the following documents in English or Czech, in electronic form (MS Office or PDF format):
* detailed instructions and manuals for the Equipment operation and maintenance in Czech or English;
* service documentation;
* list of spare parts;
* electrical connection schemes;
* technical drawings of the sample holder and tip holder, cryostat and chambers
* CE certification documents of the Equipment (if applicable);
  + 1. Training of operators at the place of performance, at least 3 days of training of 2 operators;
    2. Free-of-charge provision of license for all software relevant to all installed individual parts of the Equipment for at least 1 computer, including free software updates during the warranty period;
    3. Free-of-charge warranty Equipment service during the warranty period;
    4. Free-of-charge provision of technical support in the form of consultations (at least telephone and email support in Czech or English on working days), e.g. regarding fine tuning of the Equipment. The Seller shall provide the Buyer with this support during the warranty period.
  1. The Seller shall be liable for the Equipment and related services to be in full compliance with this Contract, its Annexes and all valid legal regulation, technical and quality standards and shall also be liable that the Buyer will be able to use the Equipment for the defined purpose. In case of any conflict between applicable standards, it is understood that the stricter standard or its part shall always apply.
  2. The Equipment and all its parts and accessories must be brand new and unused (in the case of parts and accessories, this applies to the moment of purchase by the Seller for the purpose of manufacturing the Equipment).

1. **PERFORMANCE PERIOD**
   1. The Seller undertakes to deliver the proposed technical design of the Equipment (technical drawings) according to Section 3.2.1 within 30 days of the conclusion of the Contract. The Buyer undertakes to review it and, if it meets the assignment, grants his approval within 30 days of its delivery by the Seller. Along with the technical drawings, the Seller shall submit the list with conditions according to Section 3.2.2.
   2. The Seller undertakes to deliver and hand over the Equipment to the Buyer within **24 months** of the conclusion of the Contract (after all technical details regarding the equipment being clarified).
   3. The Seller is obliged to notify the Buyer of the date of delivery and installation of the Equipment at least 20 working days in advance. This term is subject to the consent of the Buyer.
2. **PURCHASE PRICE, INVOICING, PAYMENTS**
   1. The purchase price is based on the Seller’s submitted bid and amounts to **\_\_\_\_\_\_\_\_\_\_\_\_ EUR** (in words: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) (TO BE FILLED IN BY THE BIDDER)excluding VAT for the Equipment (hereinafter the **“Price”**)
   2. VAT shall be settled in accordance with the valid Czech regulation.
   3. The Price includes any and all performance provided by the Seller in connection with meeting the Buyer’s requirements for the proper and complete delivery of the Equipment hereunder, as well as all costs that the Seller may incur in connection with the delivery, installation, and testing of the Equipment upon handover.
   4. The Parties agreed that the Seller shall be entitled to
      1. issue an advance invoice in the amount of up to 50 % of the Price, excluding VAT after the conclusion of the Contract; the Seller shall use these funds to purchase the basic components of the Equipment in order to start manufacturing it;
      2. invoice 20 % of the Price after approval of the technical drawings by the Buyer according to Section 4.1;
      3. invoice 20 % of the Price after demonstration of purchase of vacuum components by the Seller, i.e. all vacuum pumps, UHV manipulator and SPM electronics; the Seller shall demonstrate the purchase by sending photos of the components and copies of relevant invoices;
      4. invoice the remaining part of the Price after the handover protocol in accordance with Section 10.3 (hereinafter the **“Handover Protocol”**) will have been signed; in the case the Equipment will be handed over with minor defects, the Price shall be invoiced after removal of these minor defects.
   5. All invoices issued by the Seller must contain all information required by the applicable laws of the Czech Republic and, in addition, they must
      1. contain registration number of this Contract, which the Buyer shall communicate to the Seller based on Seller’s request before the issuance of the first invoice,
      2. state that the Equipment is supplied for the purposes of the projects "CzechNanoLab+" and "Teraferroics for ultra-high capacity, speed and energy-efficiency of information technology" with the registration numbers CZ.02.01.01/00/23\_015/0008200, CZ.02.01.01/00/22\_008/ 0004594 respectively,
      3. comply with the double taxation agreements, if applicable.
   6. Invoices shall be payable within thirty (30) days of the date of their delivery to the above address. Payment of the invoiced amount means the date of its remittance to the Seller’s account.
   7. If an invoice is not issued in conformity with the payment terms stipulated by the Contract or if it does not comply with the requirements stipulated by law, the Buyer shall be entitled to return the invoice to the Seller as incomplete, or incorrectly issued, for correction or issue of a new invoice, as appropriate, within five (5) business days of the date of its delivery to the Buyer. In such a case, the Buyer shall not be in delay with the payment of the Price or part thereof and the Seller shall issue a corrected invoice with a new and identical maturity period commencing on the date of delivery of the corrected or newly issued invoice to the Buyer.
   8. The Buyer shall be entitled to unilaterally set off any of their payments against any receivables claimed by the Seller due to:
      1. damages caused by the Seller,
      2. contractual penalties.
   9. The Seller shall not be entitled to set off any of his receivables against any part of the Buyer’s receivable hereunder.
3. **OWNERSHIP TITLE**

The ownership right to the Equipment and at the same time the associated risk of damage shall pass to the Buyer upon proper handover and acceptance of the Equipment according to Section 10.3, i.e. by drawing up the Handover Protocol and its signature by an authorized representative of the Buyer.

1. **PLACE OF PERFORMANCE**

The place of performance, i.e. the place of delivery, installation and handover of the Equipment, shall be the room No. A140 in the building A at the premises of the Buyer at Cukrovarnická 112/10, 162 00 Praha 6, Czech Republic.

1. **NOTIFICATION OF DELIVERY**

The Seller shall notify the Buyer in writing of the exact date of delivery, installation and handover of the Equipment in advance and in the manner according to Section 4.3, ensuring that the deadline for the performance hereunder is maintained.

1. **INTERACTION OF THE PARTIES**
   1. The Buyer shall prepare the place of performance prior to installation of the Equipment in accordance with the Seller's requirements delivered pursuant to Section 3.2.2.
   2. The Seller is obliged to notify the Buyer of the unsatisfactory state of readiness of the place of performance, if possible.
   3. The Buyer shall provide the Seller with reasonable assistance in transporting the Equipment inside the building to the place of performance
   4. The Seller undertakes to notify the Buyer of any obstacles on his part, which may negatively influence proper and timely delivery and/or handover of the Equipment.
   5. The Seller undertakes to provide the Buyer with cooperation in the event of inspections by authorized entities in connection with the Projects.
2. **DELIVERY, INSTALLATION, HANDOVER AND ACCEPTANCE**
   1. The Seller shall transport the Equipment at his own cost to the place of performance. If the shipment is intact, the Buyer shall issue a delivery note for the Seller.
   2. The Seller shall perform and document the installation of the Equipment and launch experimental tests in order to verify whether the Equipment is functional and meets the technical requirements of Annexes No. 1 and 2 hereof.
   3. The handover procedure shall be completed by handover of the Equipment confirmed by the Handover Protocol containing specifications of all performed tests. Handover Protocol shall contain the following mandatory information:
      1. Identification of the Seller, the Buyer, and any subcontractors;
      2. Description of the Equipment, including description of all components and their serial / production numbers;
      3. Description of executed tests according to the relevant part of Section 3.2.5 of the Contract and their results;
      4. List of technical documentation according to Section 3.2.6 of the Contract;
      5. Confirmation of the training according to Section 3.2.7 of the Contract, including a list of participants and information on its extent;
      6. Buyer’s possible objections to minor defects of the Equipment, including the manner of and deadline for their removal and
      7. Signatures of authorized representatives of the Buyer and the Seller, with the date indicated.
   4. Handover of the Equipment does not relieve the Seller from liability for damage caused by its defects.
   5. The Buyer shall not be obliged to accept the Equipment or any part thereof which is defective (even if such defects - on their own or in connection with other defects – do not constitute an obstacle to the use of the Equipment). In such a case, the Buyer shall issue a report containing the reason for his refusal to accept the Equipment or its part. If the Equipment or its part upon handover does not meet the parameters defined in Annexes No. 1 and 2 to this Contract, such non-compliance is considered a defect of the Equipment.
   6. Should the Buyer not exercise his right not to accept the Equipment or its part with a defect, the Seller and the Buyer shall list all defects detected in the Handover Protocol, including the manner of and deadline for their removal. Should the Parties not be able to agree in the Handover Protocol on the deadline for removal of the defects, it shall be understood that all above shall be removed / rectified within 60 days of handover.
3. **REPRESENTATIVES, NOTICES**
   1. The Seller authorized the following representatives to communicate with the Buyer in all matters relating to the Equipment delivery, installation and handover:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e-mail: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

tel. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (TO BE FILLED IN BY THE BIDDER)

* 1. The Buyer authorized the following representatives to communicate with the Seller in all matters relating to the Equipment delivery, installation and handover:

xxxxxxxxxxxxxxxx  
e-mail: xxxxxxxxxxxxxxxx  
tel. (+420) xxxxxxxxxxxxxxxx

* 1. The representatives according to Sections 11.1 and 11.2 can be changed by a unilateral written declaration of the Buyer / Seller delivered to the Seller / Buyer.
  2. All notifications to be made between the Parties hereunder must be made out in writing and delivered by hand (with confirmed receipt) or by post (to the address of the Seller’s or Buyer’s registered offices), or in the form of electronic delivery incorporating electronic signature (qualified certificate) to [epodatelna@fzu.cz](mailto:epodatelna@fzu.cz) in the case of Buyer and to \_\_\_\_\_\_\_\_\_\_\_\_\_\_(TO BE FILLED IN BY THE BIDDER) in the case of the Seller.
  3. In all technical and expert matters (discussions on the Equipment testing, notification of the need to provide warranty or post-warranty service, technical assistance etc.), electronic communication between technical representatives of the Parties will be acceptable using e-mail addresses specified in Sections 11.1 and 11.2.

1. **TERMINATION**
   1. This Contract may be terminated early by agreement of the Parties or withdrawal from the Contract on the grounds stipulated by law or in the Contract.
   2. The Buyer is entitled to withdraw from the Contract without any penalty from the Seller in any of the following events:
      1. The Seller is experiencing such a long delay in delivering the Equipment that it prevents the Buyer from successfully completing any of the Projects and paying for the Equipment from the relevant project grant.
      2. In material respects, upon delivery of the Equipment, the technical parameters or other conditions set out in the technical specifications defined in Annexes No. 1 and 2 to this Contract will not be met, or the Equipment will not meet the relevant applicable technical standards.
      3. Facts emerge indicating with the highest degree of probability that the Seller will not be able to deliver or handover the Equipment (e.g. demonstrably imminent insolvency of the Seller).
   3. In all cases, according to Section 12.2, the Buyer may also withdraw from the Contract only to the extent of the part relating to the mentioned breach of the Contract.
   4. The Seller is entitled to withdraw from the Contract in the event of the Buyer is in default with the payment for more than 1 month except of the cases if the Buyer refused an invoice due to defect on the Equipment or its part or due to the breach of the Contract by the Seller.
   5. Withdrawal from the Contract shall be effective on the date the notice of withdrawal is delivered to the Seller / Buyer. In the event of withdrawal, the performances received under this Contract (or its part in the case of withdrawal according to Section 12.3) prior to withdrawal shall be duly returned.
   6. In the event of early termination of the Contract, the Seller shall ensure the removal of the Equipment or its part from the place of performance within 30 days from the date on which withdrawal from the Contract became effective. The removal of the Equipment must be preceded by the return of any already paid part of the Price to the Buyer’s account. The Buyer will provide the Seller with the necessary cooperation, similar to the cooperation during the installation of the Equipment. The cost of removal shall be paid by the Party which caused the early termination of the Contract by breaching it.
2. **INSURANCE**
   1. The Seller undertakes to insure the Equipment against all risks, in the amount of the Price for the entire period from the commencement of the transportation of the Equipment until duly handed over to the Buyer. In the event of a breach of this obligation, the Seller shall be liable to the Buyer for damages incurred in connection therewith.
   2. The Seller is liable for the damage that he has caused. The Seller is also liable for damage caused by third parties that have undertaken to carry out performance or part thereof under this Contract.
3. **WARRANTY TERMS**
   1. The Seller shall provide warranty for the quality of the Equipment for a period of **\_\_\_** **months** (TO BE FILLED IN BY THE BIDDER – minimum is 12 months).
   2. The warranty period shall commence on the day following the date of signing of the Handover Protocol pursuant to Section 10.3 hereof.
   3. The warranty does not cover consumable parts. Consumable parts for the purposes of the Contract are the items contained in the Equipment which are consumed at regular intervals during the normal use of the Equipment, i.e. parts which have a specified typical lifetime, that does not exceed the warranty period provided the Equipment is used with normal frequency.
   4. In case of a defect, the Seller undertakes to provide free Equipment service through authorized technicians and free service inspection of the warranty at the place of performance for the entire warranty period according to this Contract, including repairs, delivery of spare parts, transport and work of an authorized service technician (to the extent specified by the Equipment manufacturer and by the Contract and only if the manufacturer makes such inspections a condition of the warranty).
   5. Should the Buyer discover a defect, he shall notify the Seller to remove such defect using the e-mail address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (TO BE FILLED IN BY THE BIDDER). The Seller is obliged to notify the Buyer without delay about any change of this e-mail address. The Seller shall be obliged to respond to any warranty claim within 3 business days from its receipt (either by email, phone or visit) and then to initiate measures together with the Buyer to identify and eliminate the defect. All the above shall remain in force unless agreed otherwise by the Parties.
   6. During the warranty period, the Seller shall be obliged to remove any claimed defects within 30 days from receipt of the warranty claim. In case of defects when a specia~~l~~ component is needed, the Seller shall be obliged to remove the defect within a period corresponding to the nature of the defect and to set a deadline for handing over the repaired Equipment.
   7. During the warranty period, any and all costs associated with defect removal / repair including transport and travel expenses of the Seller shall always be borne by the Seller.
   8. The repaired part of the Equipment shall be handed over by the Seller to the Buyer on the basis of a protocol confirming the removal of the defect (hereinafter the “**Repair Protocol**”). If the part of the Equipment is duly repaired and defect-free, the Buyer will confirm the Repair Protocol.
4. **CONTRACTUAL PENALTIES**
   1. The Buyer shall be entitled to a contractual penalty in the amount of 0.02 % of the Price for each commenced day of delay with the performance pursuant to Section 4.1 hereof and in the amount of 0.03 % of the Price for each commenced day of delay with the performance pursuant to Section 4.2 hereof.
   2. The Buyer shall be entitledto a contractual penalty in the amount of 0.01 % of the Price for each commenced day of delay with the performance pursuant to Section 14.5 hereof and with the removal of defects claimed within the warranty period pursuant to Section 14.6 and 14.10 hereof.
   3. In the event of default in payment of any due receivables (monetary debt) under the Contract, the defaulting Party (the debtor) shall be obliged to pay a contractual penalty of 0.05 % of the amount due for each commenced day of delay in payment.
   4. The total amount of contractual penalties for the Seller shall not exceed **5%** of the Price and the same shall apply to the Buyer.
   5. Contractual penalties are payable within 30 days of receipt of the demand for payment.
   6. Payment of the contractual penalty shall be without prejudice to the rights of the Parties to claim compensation for damages incurred.
   7. Payment of any contractual penalty cannot be demanded if the breach of the contractual obligation is caused by force majeure.
5. **DISPUTES**

Any and all disputes arising from or relating to this Contract shall be settled by the Parties by mutual negotiations. In the event that any dispute cannot be resolved by negotiations within sixty (60) days, the dispute shall be resolved by a competent court in the Czech Republic upon a legal action brought by either Party; the competent court shall be determined by the location of the registered office of the Buyer. Disputes shall be settled exclusively under the law of the Czech Republic.

1. **FINAL PROVISIONS**
   1. This Contract constitutes the entire agreement between the Parties. The relations between the Parties not regulated by this Contract shall be governed by Czech law, in particular by the Act No. 89/2012 Coll., the Civil Code, as amended (hereinafter the **“Civil Code”**).
   2. This Contract may be amended or supplemented solely by written amendments. The Parties expressly refuse to amend the Contract in any other way.
   3. The Parties expressly agree that the Contract as a whole, including all attachments, will be published in accordance with Act No. 340/2015 Coll. on special conditions for the effectiveness of some contracts, publication of these contracts and Contract Register, as amended. The Parties hereby declare that all information contained in the Contract and its Annexes is not considered trade secrets under § 504 of the Civil Code and grant permission for their disclosure without setting any additional conditions.This Contract becomes effective as of the day of its publication in the Contract Register, which shall be provided by the Buyer.
   4. The following Annexes form an integral part of the Contract:

Annex No. 1: Technical specification on the subject of performance (In the table Tab. 1, the Bidder shall fill in the columns “Description and specification of the Equipment offered by the Seller” and “Complies YES / NO”. In the table Tab. 2, the Bidder shall indicate value in the second column.)

Annex No. 2: Technical description of the Equipment as presented in Seller’s bid (Bidder shall present in his bid)

Annex No. 3: Affidavit according to § 6 paragraph 4 of the Act No. 134/2016 Coll.

* 1. The Parties, manifesting their consent with the entire contents of this Contract, attach their signature hereunder.

In Prague

For the Buyer

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

RNDr. Michael Prouza, Ph.D.

Director

In \_\_\_\_\_\_\_\_\_\_

For the Seller

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_ (TO BE FILLED IN BY THE BIDDER)

**Annex No. 1 - Technical specification on the subject of performance**

**Tab. 1 – The Equipment is a *Low-temperature Scanning Probe Microscope with magnetic field working in ultra-high vacuum*. It must meet the technical conditions and include components listed in this table.**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Description and minimum specification of the Equipment as defined by the Buyer | Description and specification of the Equipment offered by the Seller | Complies YES/NO |
|  | ***Maximum Equipment dimensions*** |  |  |
| 1‍ | Equipment dimensions (including clearance for cryostat installation and other necessary actions) must strictly comply with the inner dimensions of the laboratory. Maximum height of the laboratory is 367 cm, without crane. |  |  |
|  | ***SPM head*** |  |  |
| 2 | Coarse motion 3 axes (x/y/z) > (0.8/0.8/4) mm. (at T = 5K and room temperature) |  |  |
| 3 | Scanning range (x/y/z) of scanner piezo at 4K is > 0.8 x 0.8 x 0.1 μm. |  |  |
| 4 | STM measurements possible with normal STM tips. Possibility of future upgrade to ncAFM based on qPlus sensors. |  |  |
| 5 | Possibility of replacing the tip and sample in-situ (inside) without breaking UHV. |  |  |
| 6 | High frequency cabling to the STM head or junction with SMA UHV feedthroughs, minimum 2 cables (one for RF antenna and one for sample side). |  |  |
| 7 | z-noise max. 3 pmrms/sqrt(Hz) evaluated at 1kHz bandwidth, T < 150mK and B>= 1T, parameters for tunnelling contact I = 10 pA, U = 50 mV, |  |  |
| 8 | Guaranteed minimum tunnelling current set point I < 2.0 pA at T < 150mK and B>= 1T |  |  |
| 9 | Guaranteed STM atomic resolution on Au(111) at T < 150mK and B>= 1T |  |  |
| 10 | At least 3 independent electrical contacts to the sample stage. |  |  |
| ‍11 | Internal vibration isolation |  |  |
|  | ***Cryostat*** |  |  |
| 12 | Possibility to reach base and hold temperature of cold head lower than 150mK continuously. |  |  |
| 13 | Thermometry at minimally 3 temperature stages to monitor cryostat temperatures including the SPM head. |  |  |
| 14 | Minimum magnetic field at the sample position of 1 T in z-direction (perpendicular to the sample plane). |  |  |
| 15 | Software controlled power supply for remote operation of the magnet and automated performed experiments. |  |  |
|  | ***SPM operation hardware*** |  |  |
| 16 | SPM operation control electronics:   1. Controlled by a realtime operating system. 2. Ability to fully control specific functions of SPM head including STM. 3. Capability of spectral analysis of signal in the real time. 4. Capability to perform an atomically resolved point spectroscopy (including atomic-tracking system, drift correction system, scan plane compensation) 5. A/D converter requirements: 6. Minimum 6 inputs with at least 16-bit resolution 7. Capability of effective 20-bit resolution with up to 10x oversampling 8. Programmable SPM interface module 9. Capability to record simultaneously at least 8 channels. 10. Easy compatibility and interchangeability with Nanonis™ 5 controller electronics used by the group in other Buyer’s laboratories. |  |  |
| 17 | High Performance STM preamplifier with trans impedance gain from 103 to 1011 V/A and BandWidth up to 500 kHz |  |  |
|  | ***STM Exchange Chamber*** |  |  |
| 18 | Base pressure lower than 6e-10 mBar at room temperature after UHV bakeout and system cooldown. |  |  |
| 19 | Flanges on the chamber must be arranged to allow mounting of:   1. visual inspection windows, 2. sample transfer system (manipulator, wobblestick). 3. at least 2 CF40 flanges for evaporation. |  |  |
| 20 | Pumping with an ion getter pump (with pumping speed adequate to pumped chamber space) combined with titanium sublimation pump (TSP). |  |  |
| 21 | Vacuum gauge |  |  |
| 22 | Possibility to store samples and STM tips in the exchange chamber. |  |  |
|  | ***Preparation Chamber*** |  |  |
| 23 | Must be separated from the exchange chamber with a gate valve (manually operated). |  |  |
| 24 | Must be separated from the load lock chamber with a gate valve (manually operated). |  |  |
| 25 | Flanges on the chamber must be arranged to allow mounting of:   1. the linear motion manipulator for the tip/sample transfer between the preparation and experimental part (part of the Contract) 2. IGP pump (part of the Contract) 3. turbomolecular pump (part of the Contract) 4. windows for optical control of tip/sample (part of the Contract) 5. load lock (LL) chamber (part of the Contract) 6. mass spectrum analyzer (NOT part of the Contract) 7. ion sputter source (part of the Contract) 8. at least two evaporators (NOT part of the Contract) allowing co-deposition on the sample 9. pressure gauge (part of the Contract) 10. a leak valve (part of the Contract) 11. TSP – titanium sublimation pump (part of the Contract) |  |  |
| 26 | Ion gun to clean samples with possibility of remote control (part of the Contract)   1. with a leak valve to controlled dosing of sputtering gas, 2. range at least 0.2 – 3 kV ion beam energy, 3. capability to clean the Argon supply line prior to sputtering with a turbomolecular pump. |  |  |
| 27 | Base pressure lower than 6e-10 mBar at room temperature after UHV bakeout. |  |  |
| 28 | Manipulator with capability to heat sample at least up to 1300 °C (e-beam) and 1100 °C (direct current heating) and power supply with control unit. |  |  |
| 29 | Full-range vacuum gauge. |  |  |
| 30 | Pumping with an ion pump (with pumping speed adequate to pumped chamber space) combined with titanium sublimation pump (TSP). |  |  |
| 31 | Possibility to store more than 3 samples and more than 3 tips. |  |  |
|  | ***Load-lock chamber*** |  |  |
| 32 | Independent pumping with turbo pump. |  |  |
| 33 | Capability to reach pressure 9e-7 mBar in less than 1 hour |  |  |
| 34 | Adequate system of sample transfer. |  |  |
|  | ***Auxiliary components required for complete operation of the system*** |  |  |
| 35 | Three-phase supply rack with:   1. capability to provide sufficient output power for all control units of the devices in the chamber, 2. sufficient output power for functional chamber bake-out, 3. even load on all master power supply phases. |  |  |
| 36 | An automatic controller for bake-out of the whole system. |  |  |
| 37 | Equipped with a device for the bake-out of the system (tent or similar solution). |  |  |
| 38 | High-end PC with at least 2 screens to operate system and perform state of art scientific work. |  |  |

(Bidders shall fill in the columns “Description and specification of the Equipment offered by the Seller” and “Complies YES / NO”.)

**Tab. 2 – Data on the evaluation criterion “Technical characteristics of the bid”**

|  |  |
| --- | --- |
| **Description** | **Value** |
| **Minimum temperature** (*in K*) | **\_\_\_** |
| **Maximum magnetic field** (*in T*) | **\_\_\_** |
| **2 separate sets of turbo pump and scroll pump for load lock and**  **preparation chamber** (*YES / NO*) | **\_\_\_** |
| **Automatic valve between preparation chamber and Turbo pump**  (*YES / NO*) | **\_\_\_** |
| **Specified minimum tunnelling current < 2.0 pA** (*YES / NO*) | **\_\_\_** |
| **Specified z-noise evaluated at 1kHz bandwidth and T < 150 mK**  *(in pmrms /√Hz)* | **\_\_\_** |

(Bidders shall fill in the second column.)

**Annex No. 2**

**The Seller’s bid in the extent it describes technical parameters of the Equipment**

(Bidder shall present in his bid)

**Annex No. 3**

**Affidavit according to § 6 paragraph 4 of the Act No. 134/2016 Coll.**

(to be attached before the conclusion of the Contract)