



INVITATION TO SUBMIT A BID

for the small size public procurement for supplies

„VUV Monochromator UHV chamber TP17_011”

(“Public Procurement”) that is to be concluded in the procedure according to the Rules for applicants and beneficiaries (“Rules”) under the Research, Development and Education Operational Programme.

Name of the contracting authority:	Institute of Physics of Academy of Sciences of the Czech Republic, public research institution
Registered office:	Na Slovance 2, Praha 8, PSČ: 182 21
Identification No.:	68378271
Tax Identification No.:	CZ68378271
Person authorized to act on behalf of the contracting authority:	RNDr. Michael Prouza, Ph.D., director
Contact person:	David Pokorný
Telephone:	00 420 601 555 056
E-mail:	david.pokorny@eli-beams.eu

(“Contracting Authority”)

1. GENERAL INFORMATION

The subject matter of the Public Contract shall be funded from Research, Development and Education Operational Programme, project No. CZ.02.1.01/0.0/0.0/15_008/0000162, project title “ELI: EXTREME LIGHT INFRASTRUCTURE – Phase 2”.

- 1.1 The Contracting Authority does not follow the rules for public procurements set out in the act no. 134/2016 Coll., on public contracts awarding (“Act”), because the Public procurement is considered a small size public procurement within the meaning of Section 27 of the Act.
- 1.2 However, the award procedure is subject to Rules due to the fact that the Public Procurement is financed from the Research, Development and Education Operational Programme.



1.3 If the Contracting Authority uses references to the Act, it means that the Contracting Authority shall proceed analogically in relation to the Act. However, these links to the Act do not imply that the Public Procurement is awarded in accordance with the Act.

1.4 Part of this invitation is also the tender documentation for the Public Procurement.

2. PUBLIC PROCUREMENT SPECIFICATION

The subject matter of the tender is ensuring the supplies of the vacuum chambers for the High-Harmonic-Generation Secondary Source's (HHG) Monochromator. The system shall consist of the main vacuum chamber housing the focusing optics and diffractive mirrors. Additional parts of the system shall be a slit box, a detector chamber as well as the B4MAC, a refocusing optic vacuum chamber. The tender is for the vacuum hardware of the VUV Monochromator UHV chamber TP17_011. All interior fittings (optics, optomechanics etc.) are not part of the tender.

(“Products”)

2.1 The bidder shall include in its bid the description of the offered Products (e.g. product sheets, data sheets, etc.), so that the Contracting Authority may assess whether its requirements are fulfilled.

3. EXPECTED VALUE OF THE PUBLIC PROCUREMENT

3.1 The expected value of the Public Procurement is EUR 50 000,- without value added tax (VAT).

3.2 **The expected value of the Public Procurement is the maximum price for the Public Procurement that cannot be exceeded, i.e. the bidder that will offer higher bid price for the Public Procurement will be excluded from the award procedure.**

4. THE TIME AND PLACE OF DELIVERY

4.1 The supplier shall deliver the Products and carry out related activities within 12 weeks from the date of the signature of the contract.

4.2 The place of delivery is at the address: ELI Beamlines, Průmyslová 836, post code 252 41, Dolní Břežany, Czech Republic or other address in Dolní Břežany specified by the Contracting Authority prior to the delivery of Products.

5. BUSINESS AND PAYMENT TERMS

5.1 Business and payments terms and conditions are contained in the draft of the contract. The bidder must fill in the contract where required (i.e. their identification data, and other data that are required by the Contracting Authority).

5.2 The bidders are not allowed to change or supplement the draft of the contract, i.e. the bidders must accept the draft of the contract as is attached to this invitation. Bidders particularly shall not refer in their bids to their business conditions and terms.



- 5.3 The draft of the contract must be signed by a person authorized to act on behalf of the bidder. If the draft of the contract is signed on the basis of the power of attorney or other authorization, then the power of attorney or other authorization must be included in the bid.

6. THE DATE AND PLACE OF THE SUBMISSION OF BIDS

- 6.1 Bids must be submitted to the address: **Fyzikální ústav AV ČR, v. v. i. - ELI, DEP. 95 – David Pokorný, Za Radnicí 835, Dolní Břežany, post code: 252 41, Czech Republic, on 09. 8. 2017 until 14:00 at the latest.**
- 6.2 Bids may be supplied by post, courier, or personally to the above mentioned address in working days between 8-15 hours. On the last day of the period for the submission for bids the bids may be submitted until 14:00 o'clock.

7. EXPLANATIONS REGARDING THE TENDER CONDITIONS

- 7.1 The supplier is entitled to require in written form explanations regarding the tender conditions from the Contracting Authority. The written request must be received by the Contracting Authority no later than 4 working days before the deadline for submission of bids.
- 7.2 The Contracting Authority sends explanations regarding the tender condition and possibly related documents no later than 2 working days after receiving written request from the supplier. If the request from the supplier is not delivered in time and despite this fact the Contracting Authority decides to provide explanations regarding the tender conditions, then the time limit in the preceding sentence does not need to be observed by the Contracting Authority.
- 7.3 The explanations regarding the tender conditions (including the exact wording of the request of the supplier) shall be provided to all suppliers at the same time and sent in the same manner as this invitation.
- 7.4 The Contracting Authority is entitled to provide explanations regarding the tender conditions without prior request. In such cases the Contracting Authority proceeds analogically according to the preceding paragraphs.
- 7.5 The Contracting Authority may modify the tender conditions before the deadline for submission of bids elapses. The modification has to be notified to the suppliers in the same manner as the tender conditions that was the subject of modification. If the Contracting Authority through explanations of the tender conditions makes modification of the tender conditions and the nature of the such modification requires it, the Contracting Authority shall reasonably extend the deadline for the submission of bids. In the event such a modifications, which may extend the range of potential bidders, the Contracting Authority will extend the deadline so that the potential bidders have the entire length of the original deadline for the submission of bid.



8. EVALUATION CRITERIA

- 8.1 Bids shall be evaluated on the basis of the lowest bid price criterion. The Contracting Authority shall (only for the purposes of evaluation and assessment) change bid prices into CZK. The exchange rate shall be the middle rate of Czech National Bank, which will be valid at the last day, on which bids could be submitted.
- 8.2 In the case that two or more bids contain the same lowest bid price, the time of the submission of the bid shall be a decisive element, i.e. the bid that was submitted earlier shall have priority over the bid that was submitted later.

9. BID PRICE

- 9.1 The Bidders must fill in the **COVER SHEET OF THE BID ANNEX. NO.1**. The bidder shall also fill in the currency, which must be EUR.
- 9.2 The bid price is the maximum price that cannot be exceeded and shall include all costs that the bidder shall incur during the performance of the Public Procurement.

10. FORMAL BID REQUIREMENTS

- 10.1 **All bids must be submitted separately to each part of the public contract** (even though more bids are submitted by the same bidder) in writing in duly sealed envelope designated by the identification data of the bidder. The envelope must be designated by inscription **“DO NOT OPEN”** and by title of the Public Procurement **„VUV Monochromator UHV chamber TP17_011”** On the envelope shall be address to which the Contracting Authority may send information regarding the Public Procurement.
- 10.2 The bid shall contain identification data of the bidder. This requirement is fulfilled by filling the cover sheet of the bid.
- 10.3 The bid must be submitted in Czech, Slovak or English language. This requirement is fulfilled if documents that by its nature cannot be in the required language are at least translated into one of the required languages.
- 10.4 The bid must contain the draft of the contract signed by the person authorized to act on behalf of the bidder.
- 10.5 All pages in the bid must be secured against unauthorized manipulation (e.g. bound by string and sealed), so that additional documents cannot be inserted nor any pages removed. The bid must be clearly readable, without any crossed words or other discrepancies.
- 10.6 The bidder must submit a bid in its original (paper) form.
- 10.7 The bidder must also include in the bid a CD-ROM, USB, or other generally used data carrier with an electronic copy of the bid (all paper documents in the bid).
- 10.8 If the bid is submitted jointly by several bidders (joint bid), a contact person authorized to represent all such bidders must be designated in the bid.



10.9 The bids must be structured in the following manner:

- a) **Cover sheet**
Bidders shall fill in cover sheet
- b) **The description of the offered product**
- c) **Draft of the contract signed by the person authorized to act on behalf of the bidder.**

11. FINAL PROVISIONS

- 11.1 The Contracting Authority is entitled to cancel the award procedure anytime prior to the signature of the contract.
- 11.2 The Contracting Authority does not allow alternative bids.
- 11.3 The Contracting Authority is entitled to change or supplement the provisions of this invitation.
- 11.4 The bidders shall bear all their costs connected with their participation in the award procedure initiated by this invitation.

12. LIST OF ANNEXES

- a) Annex 1 Cover sheet
- b) Annex 2 Draft of the contract
- c) Annex 3 Technical specification

In Prague on 26. 7...... 2017


.....
RNDr. Michael Prouza, Ph.D., director

Fyzikální ústav AV ČR
veřejná výzkumná instituce
182 21 Praha 8, Na Slovance 2

- 1 -



ANNEX 1

COVER SHEET OF THE BID - Part No. 1

Public procurement title: VUV Monochromator UHV chamber TP17_011

Contracting Authority: Fyzikální ústav AV ČR, v.v.i.
Registered office: Na Slovance 2, 182 21 Praha 8
Registration No.: 68378271
Person authorized to act on behalf of the bidder: RNDr. Michael Prouza, Ph.D., director

Contact person: David Pokorný

Telephone: 00 420 601 555 056

E-mail: david.pokorny@eli-beams.eu

Bidder:
Registered office:
Identification No.:
Tax Identification No.:
Person authorized to act on behalf of the bidder:
Bank account:
Contact person:
Contact address:
Telephone:
E-mail:

The Bid Pricein EUR without VAT



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ANNEX 2

DRAFT OF THE CONTRACT



PURCHASE CONTRACT

This purchase contract ("Contract") was concluded pursuant to section 2079 *et seq.* of the act no. 89/2012 Coll., Civil Code ("Civil Code"), on the day, month and year stated below by and between:

- (1) **Fyzikální ústav AV ČR, v.v.i.,**
(Institute of Physics of the Academy of Sciences of the Czech Republic, a public research institution),
with its registered office at: Na Slovance 2, Praha 8, PSČ: 182 21,
registration no.: 68378271,
represented by: RNDr. Michael Prouza, PhD. – director
("Buyer"); and
- (2) _____,
with its registered office at: _____,
registration no.: _____,
represented by: _____
enrolled in the commercial registered kept by _____
("Seller").

(The Buyer and the Seller are hereinafter jointly referred to as "Parties" and individually as "Party".)

WHEREAS

- (A) The Buyer is a public contracting authority and the beneficiary of a grant of the Ministry of Education, Youth and Sports of the Czech Republic for a project „ELI: EXTREME LIGHT INFRASTRUCTURE – Phase 2“, reg. number: CZ.02.1.01/0.0/0.0/15_008/0000162 and other ("Project"), within the Operational Programme Research, Development and Education.
- (B) For the successful realization of the Project it is necessary to purchase the Object of Purchase (as defined below) in accordance with the Rules for the Selection of Suppliers within the Operational Programme Research, Development and Education.
- (C) The Seller wishes to provide the Object of Purchase to the Buyer for consideration.



- (D) The Seller's bid for the public procurement entitled "VUV Monochromator UHV chamber TP17_011", whose purpose was to procure the Object of Purchase ("Public Procurement"), was selected by the Buyer as the most suitable.

IT WAS AGREED AS FOLLOWS:

1. BASIC PROVISIONS

- 1.1 Under this Contract the Seller shall deliver to the Buyer the HHG Monochromator chamber and its auxiliary parts (entitled "VUV Monochromator UHV chamber TP17_011") as all described in Annex 1 (Technical Specification) and Annex 2 (Seller's Technical Specification) to this Contract in the quality and with the properties described in the Technical specification ("Object of Purchase" or "Devices") and shall transfer to the Buyer ownership right to the Object of Purchase, and the Buyer shall take over the Object of Purchase and shall pay the Seller the Purchase Price (as defined below), all under the terms and conditions stipulated in this Contract.
- 1.2 Under this Contract the Seller shall also carry out the following activities ("Related Activities"):
- a) to develop the design of all Devices as stipulated in the Technical specification prepared by the Buyer and provide the detailed design of Devices to the Buyer for approval (hereinafter the "Detailed design of Devices");
 - b) to deliver the Object of Purchase to the place of delivery;
 - c) to provide tests/verifications of the Object of Purchase as stipulated by the Buyer in the Technical specification at the place of delivery hereof;
 - d) to supply to the Buyer all documents required by the Buyer in the Technical specification (ie. manual, declaration of conformity, reports, models, drawings, etc.);
 - e) to cooperate with the Buyer during the performance of this Contract in the extent stipulated in this Contract with all its annexes.

2. THE PLACE OF DELIVERY

The place of delivery is at the address: Fyzikální ústav AV ČR v.v.i/ ELI-Beamlines, Průmyslová 836, 252 41 Dolní Břežany, Czech Republic or any other address in Dolní Břežany, Czech Republic, which the Buyer communicated to the Seller prior to the delivery of the Object of Purchase.



3. THE TIME OF DELIVERY

- 3.1 The Seller shall deliver to the Buyer the Detailed design of all Devices within four (4) weeks from the date of the signature of the Contract.
- 3.2 The Buyer shall make comments in writing to the Detailed design of Devices within ten (10) days from its delivery. The Seller is obliged to accept all reasonable comments and requirements of the Buyer to the Detailed design of Devices. Should the Seller deem any of the Buyer's comments or requirements unacceptable for the final manufacturing of Devices, he shall be obliged to specify in writing the reasons for such refusal. The Seller is obliged to include all reasonable comments of the Buyer into the Detailed design of the Devices within 10 days from the date of their submission, unless agreed otherwise.
- 3.3 The Seller shall deliver the Object of Purchase and shall carry out Related Activities within twelve (12) weeks from the signature of the Contract.

4. THE OWNERSHIP RIGHT

The ownership right to the Object of Purchase shall be transferred to the Buyer upon the signature of the Handover/takeover protocol.

5. PRICE AND PAYMENT TERMS

- 5.1 The purchase price for the Object of Purchase is **amount** EUR ("Purchase Price") without value added tax ("VAT"). VAT will be paid in accordance with the applicable legal regulations.
- 5.2 The Purchase Price cannot be exceeded and includes all costs and expenses of the Seller related to the performance of this Contract. The Purchase Price includes, among others, all expenses related to the handover of the Object of Purchase and execution of Related Activities, costs of copyright, insurance, customs, warranty service and any other costs and expenses connected with the performance of this Contract.
- 5.3 The Purchase Price for the Object of Purchase shall be paid on the basis of a tax document – invoice, to the account of the Seller designated in the invoice. The Purchase Price shall be paid after the signature of the Handover/takeover protocol by the Buyer pursuant to Art. 7 para 7.2 of this Contract.
- 5.4 The Buyer shall realize payments on the basis of duly issued invoices within 30 days from their receipt.
- 5.5 The invoice issued by the Seller as a tax document must contain all information required by the applicable laws of the Czech Republic. Invoices issued by the Seller in accordance with this Contract shall contain in particular following information:



- a) Name and registered office of the Buyer,
 - b) Tax identification number of the Buyer,
 - c) Name and registered office of the Seller,
 - d) Tax identification number of the Seller,
 - e) Registration number of the tax document,
 - f) Scope of the performance (including the reference to this Contract),
 - g) Date of the issue of the tax document,
 - h) Date of the fulfilment of the Contract,
 - i) Purchase Price,
 - j) Registration number of this Contract, which the Buyer shall communicate to the Seller based on Seller's request before the issuance of the invoice,
 - k) Declaration that the performance of the Contract is for the purposes of a project „ELI: EXTREME LIGHT INFRASTRUCTURE – Phase 2“, reg. number: CZ.02.1.01/0.0/0.0/15_008/0000162.
- 5.6 In case that the invoice shall not contain the above mentioned information, the Buyer is entitled to return it to the Seller during its maturity period and this shall not be considered as a default. The new maturity period shall begin from the receipt of the supplemented or corrected invoice to the Buyer.
- 6. SELLER'S RIGHTS AND DUTIES**
- 6.1 The Seller shall ensure that the Object of Purchase and Related Activities are in compliance with this Contract including all its annexes and applicable legal (e.g. safety), technical and quality norms.
- 6.2 During the performance of this Contract the Seller proceeds independently. If the Seller receives instructions from the Buyer, the Seller shall follow such instructions unless these are against the law or in contradiction to this Contract. If the Seller finds out or should have found out if professional care was exercised that the instructions are for any reason inappropriate or illegal or in contradiction to this Contract, then the Seller must notify the Buyer.
- 6.3 All things necessary for the performance of this Contract shall procure the Seller, unless this Contract stipulates otherwise.



- 6.4 The Buyer shall not be obliged to verify correctness of any and all calculations and technical solution details during the course of the acceptance procedure.
- 6.5 The assessment of and subsequent acceptance of any fulfilment pursuant this Contract does not release the Seller from his liability for the correctness and completeness of the entire work.
- 6.6 Should it be necessary to modify any part of the already accepted deliverable in order to meet the parameters expected of the completed work, the Seller undertakes to perform such modifications and accepts that the costs related thereto are included in the Purchase Price.

7. **HANDOVER OF THE OBJECT OF PURCHASE**

- 7.1 Handover and takeover of the Object of Purchase shall be realized on the basis of a Handover/takeover protocol.
- 7.2 If the Seller fails to duly carry out all Related Activities or if the Object of Purchase does not meet requirements of this Contract, the Buyer is entitled to refuse the takeover of the Object of Purchase. In such a case the Seller shall remedy the deficiencies within twenty (20) working days, unless Parties agree otherwise. The Buyer is entitled (but not obliged) take over the Object of Purchase despite the above mentioned deficiencies, in particular if such deficiencies do not prevent the Buyer in the proper operation of the Object of Purchase. In such a case the Seller and the Buyer shall list the deficiencies in the Handover/takeover protocol, including the manner and the date of their removal (remedy). If the Parties do not reach agreement in the Handover/takeover protocol regarding the date of the removal, the Seller shall remove the deficiencies within twenty (20) working days.

8. **WARRANTY**

- 8.1 The Seller hereby provides a warranty of quality of the Object of Purchase for the period of 24 months. If on the warranty list or other document is the warranty period of longer duration, then this longer warranty period shall have priority over the period stated in this Contract.
- 8.2 The warranty period shall begin on the day of the signature of the Handover/takeover protocol by both Parties.
- 8.3 The Seller shall remove defects that occur during the warranty period free of charge.
- 8.4 If the Buyer ascertains a defect of the Object of Purchase during the warranty period, the Buyer shall notify such defect without undue delay to the Seller. Defects may be notified on the last day of warranty period, at the latest.



- 8.5 The Buyer notifies defects in writing via e-mail. The Seller shall accept notifications of defects on the following e-mail address: [REDACTED].
- 8.6 In the notification the Buyer shall describe the defect and the manner of removal of the defect. The Parties shall agree on the manner of defects removal. If the Parties do not reach the agreement, the Buyer has the right to:
- a) request removal of the defect by the delivery of new Object of Purchase or its individual parts, or
 - b) request removal of the defect by repair, or
 - c) request adequate discount from the Purchase Price.

The choice among the above mentioned rights belongs to the Buyer. However, in case of a removable defect that occurs for the first time the Buyer shall not request removal of the defect by delivery of new Object of Purchase or its individual parts.

- 8.7 The Seller shall remove the defect within 40 working days. In cases where it is not possible for objective reasons proven to the Buyer by the Seller the Parties shall agree on another sufficient deadline.
- 8.8 Parties shall execute a protocol on the removal of the defect, which shall contain the description of the defect and the confirmation that the defect was removed. The warranty period shall be extended by a period of time that elapses between the notification of the defect until its removal in cases where the Buyer was prevented from using the Object of Purchase for its intended purpose.
- 8.9 In case that the Seller does not remove the defect within stipulated time or if the Seller refuses to remove the defect, then the Buyer is entitled to remove the defect at his own costs and the Seller shall reimburse these costs within 20 calendar days after the Buyer's request to do so.
- 8.10 The warranty does not cover defects caused by unprofessional manipulation or by the failure to follow Seller's instructions for the operation and maintenance of the Object of Purchase.

9. RIGHT OF WITHDRAWAL, CONTRACTUAL PENALTIES

- 9.1 The Buyer is entitled to withdraw from this Contract, if any of the following circumstances occur:
- a) the Seller is in delay with the fulfilment of this Contract and such delay lasts more than 4 weeks; or
 - b) the insolvency proceeding is initiated against the Seller.



- 9.2 In the event the Seller is in delay with term of delivery as stipulated in Art. 3 para 3.1 or 3.3 herein, the Seller shall pay to the Buyer the contractual penalty in the amount of 0.1% of the Purchase Price for each, even commenced day of delay.
- 9.3 In the event the Seller is in delay with removal of the deficiencies of the Object of Purchase in the period stipulated in the Handover/takeover protocol, the Seller shall pay to the Buyer the contractual penalty in the amount of 0.1% of the Purchase Price for each, even commenced day of delay.
- 9.4 The Parties have agreed that the maximal amount of contractual penalties shall be limited to 5% of the Purchase Price.

10. SPECIAL PROVISIONS

By signing this Contract, the Seller becomes a person that must cooperate during the finance control within the meaning of Section 2 letter e) of the act no. 320/2001 Coll., on finance control in the public administration, and shall provide to the Directing Body of the Operational Programme Research, Development and Education or other control bodies access to all parts of the bid, Contract or other documents that are related to the legal relationship formed by this Contract. This duty also covers documents that are subject to the protection in accordance with other acts (business secrets, secret information, etc.) provided that control bodies fulfil requirements stipulated by these acts. The Seller shall secure that all its subcontractors are also obliged to cooperate with control bodies in the above stipulated extent. The possibility of effective control must be preserved until the year 2027.

11. FINAL PROVISIONS

- 11.1 This Contract is governed by the laws of the Czech Republic, especially by the Civil Code.
- 11.2 All disputes arising out of this Contract or out of legal relations connected with this Contract shall be preferably settled by a mutual negotiation. In case that the dispute is not settled within sixty (60) days, such dispute shall be decided by courts of the Czech Republic in the procedure initiated by one of the Parties.
- 11.3 All modifications and supplements of this Contract must be in writing.
- 11.4 If any of provisions of this Contract are invalid or ineffective, the Parties are bound to change this Contract in such a way that the invalid or ineffective provision is replaced by a new provision that is valid and effective and to the maximum possible extent correspond to the original invalid or ineffective provision.
- 11.5 This Contract is executed in four (4) counterparts and every Party shall receive two (2) counterparts.



- 11.6 Integral parts of this Contract are Annex 1 (Technical Specification - RSD) and Annex 2 (Seller's Technical Specification). If Annex 1 (Technical Specification) uses the term "Contracting Authority" or "contracting authority" it means Buyer. If Annex 1 (Technical Specification) uses the term "Supplier" or "supplier" it means Seller.
- 11.7 This Contract is subject to publication according to Act. No. 340/2015 Coll, on the register of contracts.

IN WITNESS WHEREOF attach Parties their handwritten signatures:

Buyer

Signature: _____

Name: RNDr. Michael Prouza, PhD.

Position: director

Date:

Seller

Signature: _____

Name: _____

Position: _____

Date: _____



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Operational Programme Research,
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MINISTRY OF EDUCATION
YOUTH AND SPORTS

ANNEX 1

TECHNICAL SPECIFICATION - RSD

(NOTE: Annex No 3 to the Tender documentation for the Public Contract shall be attached hereto by the Contracting Authority before signature hereof by the Contracting authority after the Public Procurement procedure is finished)



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ANNEX 2

SELLER'S TECHNICAL SPECIFICATION

(NOTE: Specification (catalogue) sheets or other description of Object of Purchase provided by the Seller in its bid submitted within the Public procurement shall be attached hereto by the Contracting Authority before signature hereof by the Contracting authority after the Public Procurement procedure is finished)



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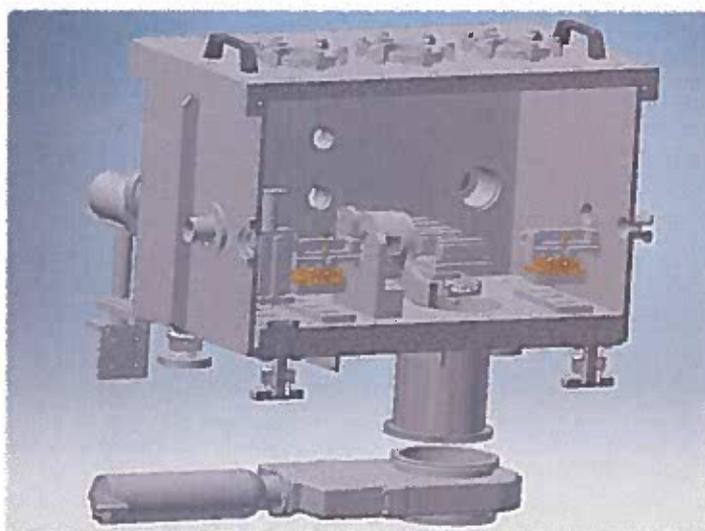
ANNEX 3

TECHNICAL SPECIFICATION - RSD

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[RSD product category B]

VUV monochromator UHV chamber TP17_011



Keywords

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	Position	Name
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Prepared by	Senior Scientist, nanostructure imaging RA4 Designer, IFN-CNR, Padova, Italy	Dong-Du Mai Fabio Frassetto

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Pavel Korouš	Chief Engineer	NOTICE (RSD product category B)	
Adam Wolf	Engineer BIS	NOTICE (RSD product category B)	
Jaroslav Nejdř	Senior Researcher - Development of X-ray sources and ray	NOTICE (RSD product category B)	
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Approved by			
<i>Name (Approver)</i>	<i>Position</i>	<i>Date</i>	<i>Signature</i>
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1. Introduction

1.1. Purpose

This Requirements Specification Document (RSD) lists the technical requirements and constraints on the VUV monochromator UHV chamber and auxiliary parts to be used with the HHG source in the E1 experimental hall of the ELI Beamlines facility.

1.2. Scope

This RSD contains all of the technical requirements: functional, design, delivery, safety and quality requirements for the following product (*PBS: E.E1.VUV.MONO.1*): **VUV monochromator UHV chamber and auxiliary parts**. In addition to the requirements specified in this RSD, the product shall comply completely with the requirements given in the Reference documents [see chapter 1.4].

This Product is a **product Category B** according to the ELI Beamlines RSD categories of products. A category B product is based on an existing design with minor adaptations to the existing model. As such, no formal design phase is required but the final design suggestion has to be accepted by the Contracting Authority (CA) before manufacturing starts. Verification (testing) of all specified parameters for every item listed in this RSD shall be undertaken by the Supplier before delivery to the ELI Beamlines facility and all items shall be furnished with a certificate of conformity, or other such document, to reflect their proper characteristics. Further, all items will be subject to verification upon delivery to the ELI Beamlines facility by ELI qualified personnel (or external contractors if required). All non-conformances (if any) must be addressed by the Supplier in a timely manner.

1.3. Terms, Definitions and Abbreviations

For the purpose of this document, the following abbreviated terms apply:

Abbreviation	Meaning
AMO	Atomic, Molecular and Optical sciences
CA	Contracting Authority
CDI	Coherent Diffractive Imaging
CEM	Channel Electron Multipliers
E1	Experimental hall 1
ELI	Extreme Light Infrastructure
HV	High Vacuum (better than $5 \cdot 10^{-6}$ mbar)
MAC	Multipurpose chamber for AMO and CDI experiments
RA4	Research activity 4 (Applications in Molecular, biomedical and materials sciences)
RGA	Residual Gas Analyzer

Abbreviation	Meaning
RSD	Requirements Specification Document
TMP	Turbomolecular Pump
UHV	Ultra-High Vacuum (better than $5 \cdot 10^{-8}$ mbar)

1.4. Reference documents

Number of doc.	Title of Document/File
RD-01	00153092-A_5.3_ES_DW_Drawings_for_VUV_monochromator_UHV_chamber_TP17_011.rar
RD-02	00112523-A_E1_Room_Datasheet.pdf

Detailed list of drawings including within **RD-01**:

DRAWING/FILE NAME	FILE FORMAT
VUV_monochromator_UHV_and_custom_equipment	stp
Stand-alone_refocusing_optic_chamber_B4MAC	stp
MAC_Chamber_Cross-refocusing_optic_chamber_B4MAC	pdf
Slit_Box	pdf

1.5. References to standards

If this document includes references to standards or technical documents the CA allows/permits also another equal solution to be offered. If the Supplier offers another equal solution the CA shall not reject its bid, once the Supplier by appropriate means in the bid proves that the offered supplies, services or works meet in an equivalent manner the requirements including references to standards or technical documents.

2. General system requirements

2.1. System Configuration

REQ-021327/A

The VUV monochromator UHV chamber and its auxiliary parts (further "**System**") shall consist of the following main components:

1. Main chamber (for toroidal mirrors and Richardson gratings);
2. Slit box;
3. Detector chamber (for CEM and/or auxiliary photodiode);
4. Refocusing optic chamber assembly B4MAC (for ellipsoidal or toroidal refocusing mirror).

NOTE: The components that will be used into the chambers are only mentioned for reference. Such components are shown in brackets and they are not part of this tender.

2.1.1. Schematic drawing of the System (Figures 1-5)

Schematic drawings of the VUV monochromator UHV chamber and its auxiliary parts are shown in Figures 1-5 below (for further information see **RD-01**, 3D CAD data: *VUV_monochromator_UHV_and_custom_equipment.stp* and *Stand-alone_refocusing_optic_chamber_B4MAC.stp*).

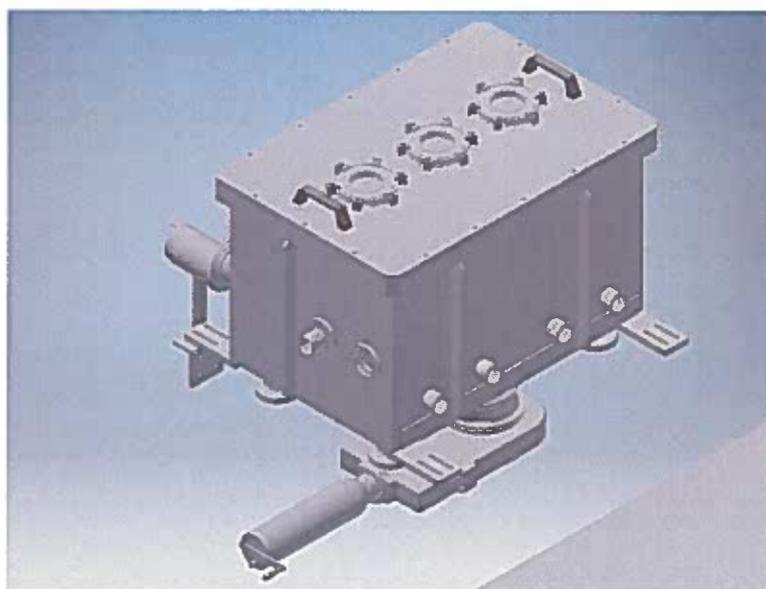


Figure 1: The VUV monochromator UHV chamber incl. ISO-KF flanges, TMP-valve and viewports.

Note that the TMP-valve is not included in this tender.

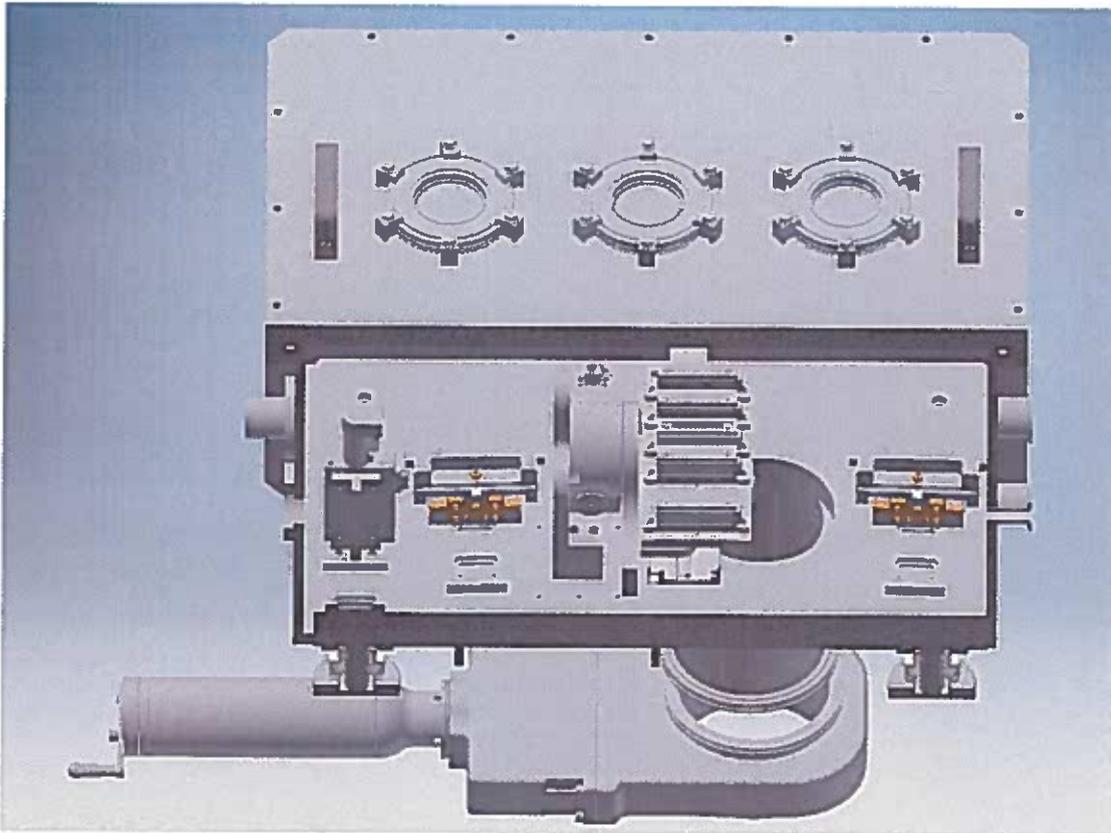


Figure 2: The VUV monochromator UHV chamber in cross-section view (internals: stages, toroidal mirrors, Richardson gratings are not included in this tender).

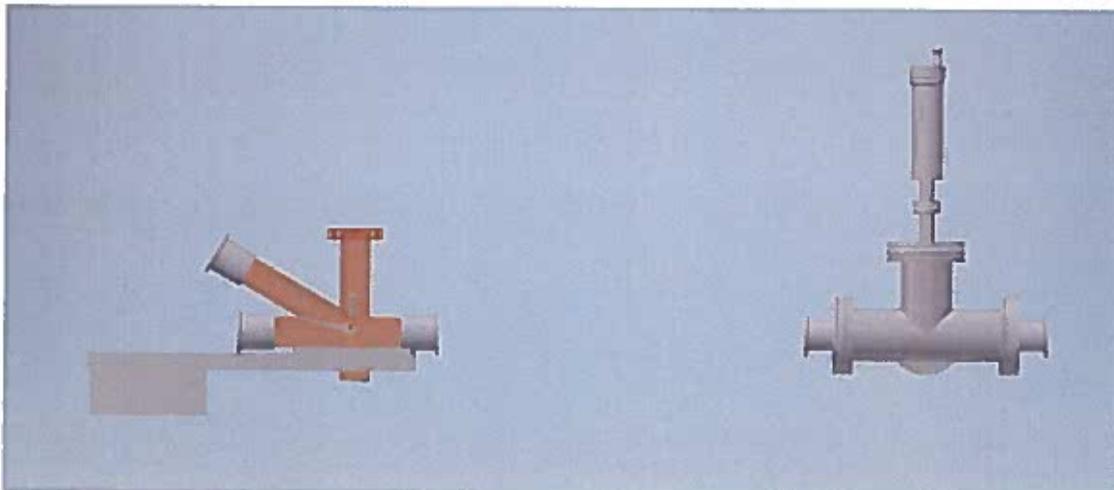


Figure 3: Auxiliary parts of the VUV monochromator UHV chamber: Slit box (left side), Detector chamber (right side). Note that the manipulator in the Detector chamber is not part of the tender.

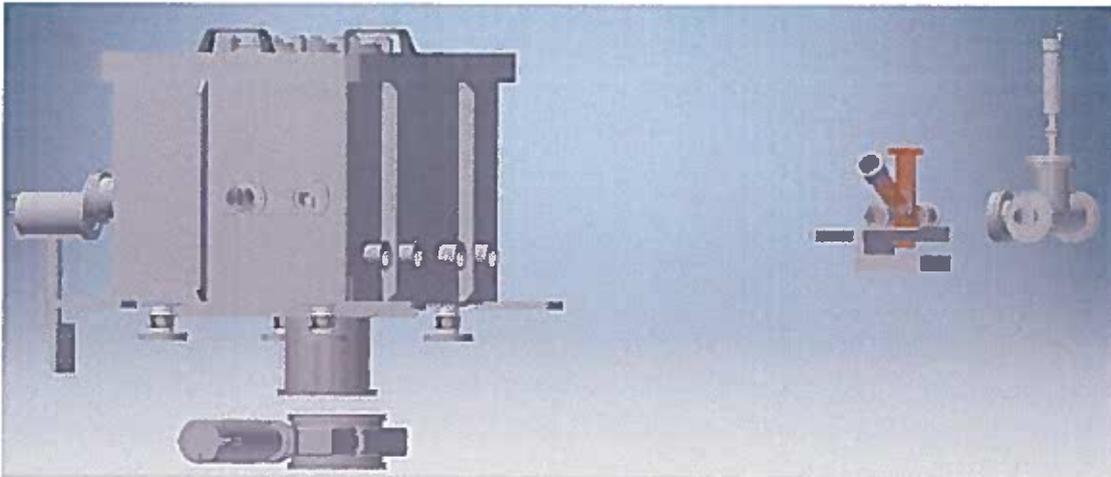


Figure 4: Oblique view of the first three components of the VUV monochromator UHV chamber.
Note that the IR beam dump (left margin) is not part of the tender.

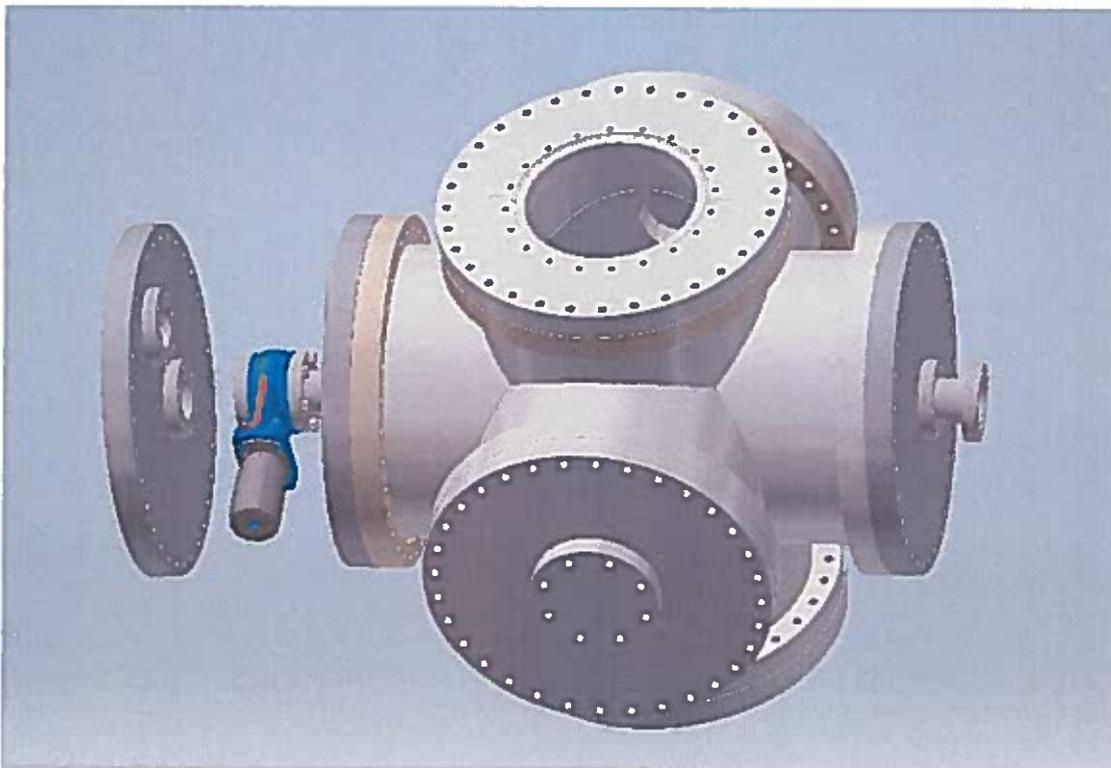


Figure 5: Refocusing optic chamber B4MAC housing a build-in breadboard, an ellipsoidal or a toroidal mirror, and a 5-degree-of-freedom stage. An Angled-Full-Nipple with DN250/40 ISO-CF Flange (left grey flange) shall be attached to the B4MAC as the entrance DN40 ISO-KF of the VUV beam. The angle shall be 5 degrees.

3. Design and Functional requirements

3.1. General requirements: VUV monochromator UHV chamber and auxiliary parts

- REQ-021329/A
Enclosed drawings and related 3D CAD data (see **RD-01**, chapter 1.4) shall be used as the CA's specified design for manufacturing.
- REQ-021330/A
The design of the System shall be made by the Supplier in conformity with the CA conceptual design.
- REQ-021331/A
Before manufacturing starts of the System, the Supplier shall provide a design suggestion for approval by the CA.
NOTE: The manufacturing of the System shall be started only after the design approval by the CA.
- REQ-021332/A
Precautions shall be taken in the design and assembly of all vacuum components during fabrication to avoid trapped and inaccessible volumes that could result in virtual leaks and complicate cleaning.
- REQ-021333/A
The System shall be designed and manufactured for operation at vacuum level better than $5 \cdot 10^{-6}$ mbar.
NOTE: For the Refocusing optics chamber B4MAC the vacuum level shall be better than $5 \cdot 10^{-8}$ mbar.
- REQ-021334/A
All vacuum components shall be HV (or UHV, for the B4MAC) compatible to comply with REQ-021333/A ($5 \cdot 10^{-6}$ mbar, or $5 \cdot 10^{-8}$ mbar for the B4MAC) and shall be manufactured using materials and procedures that will guarantee a low outgassing rate (including seal and weld integrity).
- REQ-021335/A
All cutting fluids, greases etc. used during manufacturing shall be removed by subsequent cleaning operations.
- REQ-021336/A
Sealing surfaces shall be in particular free of scratches or dents.
- REQ-021337/A
Internal surfaces of the all chambers (monochromator and auxiliary chambers) shall be electro-polished.
- REQ-021338/A
Tolerances for linear and angular dimensions shall be in accordance with ČSN ISO 2768-1 with m tolerance class; and, for geometrical tolerances, shall be in accordance with ČSN ISO 2768-2 with tolerance class K, unless stated otherwise in specific sections.

REQ-021339/A

Seal faces shall be suitably protected immediately after final machining to minimize the risk of damage.

NOTE: This protection shall only be removed for the purposes of cleaning and inspection, prior to final assembly.

REQ-021340/A

Outer surfaces shall have a uniform matte finish, obtained e.g. through Ballotini (glass beads) blasting.

NOTE: Other finish technologies are possible if agreed with the CA.

3.2. Monochromator chamber

REQ-021341/A

The Monochromator chamber shall consist of the following parts:

1. Monochromator chamber, including decoupled breadboard;
2. ISO-K flanges specified in details in REQ-021343/A.

REQ-021342/A

The Monochromator chamber and ports shall be made from stainless steel of the following type:

- 1.4306 or 1.4307 (AISI 304L);
- 1.4301 (AISI 304).

REQ-021343/A

Monochromator chamber shall be a rectangular chamber with the following lateral ports (see **RD-01**, 3D CAD data VUV_monochromator_UHV_and_custom_equipment.stp):

- 3 ports of DN100 ISO-K type for view port flanges including BK7 type of optical windows;
- 4 ports of DN40 ISO-KF type, wall mounted (entrance and exit of IR/EUV beam);
- additional multipurpose DN40 ISO-KF ports on side walls;
- 1 port of DN100 ISO-K type for IR beam rejection system including AR coated (for 850 nm central wavelength) fused silica window;
- 1 port of DN160 ISO-K type for TMP.
- 2 ports of DN100 ISO-K type or suitable size (for controller electronics feedthroughs).

NOTE: The flanges will be provided separately by the controller manufacturers and will not be included in this tender.

REQ-021344/A

The Monochromator chamber shall be opened/closed using a steel cover plate with thickness > 6 mm. The cover shall be equipped with at least two carry handles.

NOTE: Utilization of (external) hinges shall be avoided if possible.

REQ-021345/A

The breadboard shall be made of aluminum alloy (EN AW-5083 or EN AW-6082) and shall have a thickness between 12 and 13 mm, M6 holes with thread and through 25 mm hole spacing.

REQ-021346/A

The positioning of the breadboard shall be such that 12.5 mm thick breadboards have their surfaces 160 mm from the chamber's center line when mounted.

REQ-021347/A

Between the decoupled breadboard and chamber bottom shall be at least 10 mm space to enable proper operation of TMP, located at the bottom.

REQ-021348/A

A decoupling of the breadboard shall be established (details see in **RD-01**, 3D CAD data VUV_monochromator_UHV_and_custom_equipment.stp).

REQ-021349/A

The view port flanges shall be delivered with the following compatible components:

- BK7 type of optical windows - 3 pcs;
- AR-coated fused silica window - 1 pcs.

REQ-021350/A

AR-coating for fused silica windows shall be optimized for wavelengths between 700-900 nm.

3.3. Slit box

REQ-021351/A

The Slit box shall consist of the following parts:

1. Slit housing;
2. DN40 ISO-KF view-port flange with BK7 type of optical window.

REQ-021352/A

The Slit housing shall have the following ports:

- 3 ports of DN40 ISO-KF type (beam entrance/exit and CCD detector for HHG beam observation);
- 1 port of DN40 ISO-CF type for slit stage manipulator.

NOTE: The CCD detector and manipulator are not part of this tender.

REQ-021353/A

Supporting mounting bracket for the Slit box shall be in accordance with 3D CAD data VUV_monochromator_UHV_and_custom_equipment.stp (see **RD-01**) and shall meet the space and design restrictions of the surrounding area.

3.4. Detector chamber

REQ-021354/A

The Detector chamber shall consist of the following parts:

1. Detector housing;
2. DN100 ISO-K view-port flange with BK7 type of optical window.

REQ-021355/A

The Detector housing shall have the following ports:

- 2 ports of DN100 ISO-KF to DN40 ISO-KF type of reducers (beam entrance and exit);
- 1 port of DN100 ISO-K type (for view port with BK7 type of optical window);
- 1 port of DN100 ISO-K to DN16 CF type of zero-length reducer (for detector and/or target manipulation).

NOTE: Manipulator is not part of the tender.

REQ-021356/A

The Detector chamber shall be able to house a CEM (Channel Electron Multiplier) and an auxiliary photodiode.

NOTE: The CA will provide detailed information about size and weight of the detector before the manufacturing starts.

3.5. Refocusing optic chamber assembly, B4MAC

REQ-021357/A

The B4MAC assembly shall consist of the following parts:

1. B4MAC chamber;
2. Entry and exit adapter parts;
3. Gate valve and edge welded bellow.

REQ-021358/A

The B4MAC assembly shall have bakeable flanges and shall be according to the following standard:

- ISO/TS 3669-2:2007 - Vacuum technology - Bakeable flanges - Part 2: Dimensions of knife-edge flanges.

REQ-021359/A

All of the B4MAC assembly parts shall fit together according to the provided 3D CAD data Stand-alone_refocusing_optic_chamber_B4MAC.stp (see chapter 1.4, **RD-01**).

3.6. B4MAC chamber and decoupled breadboard

REQ-021360/A

The B4MAC chamber shall have six ports of DN250 ISO-CF type and overall dimensions according to the provided 3D CAD data Stand-alone_refocusing_optic_chamber_B4MAC.stp (see chapter 1.4, **RD-01**).

REQ-021361/A

The flanges of the B4MAC chamber, the adaptor flanges and edge shall be made of stainless steel of the following type:

- 1.4429-ESU (AISI 316LN ESR).

REQ-021362/A

The tubes of the B4MAC chamber shall be made of the following type of stainless steel:

- 1.4404 (AISI 316L).

3.7. Entry and exit adapter parts

The B4MAC chamber assembly shall include the entry and exit adapter parts listed below with given features (details see in **RD-01**, 3D CAD data VUV_monochromator_UHV_and_custom_equipment.stp).

REQ-021363/A

One KF/CF entry adapter to the B4MAC chamber shall have the following characteristics:

- Angled reducer nipple with DN250 ISO-CF and DN40 ISO-KF types of ports to meet the reflection angle of the exit toroidal mirror in the Monochromator chamber;
- The angle shall be 5 degrees.

REQ-021364/A

One CF/CF exit adapter from the B4MAC chamber shall have the following characteristics:

- Angled reducer nipple with DN250 ISO-CF and DN40 ISO-CF types of flanges to meet the reflection angle of the refocusing mirror in the B4MAC chamber;
- The angle shall be 5 degrees.

REQ-021365/A

One DN250 ISO-CF to DN40 ISO-CF zero length reducer with an additional off-center hole for a DN 63 CF viewport (see **RD-01**, 3D CAD data Stand-alone_refocusing_optic_chamber_B4MAC.stp for details).

REQ-021366/A

One reducer flange DN250/100 ISO-CF for a DN100 ISO-CF feedthrough flange.

NOTE: Feed through flange will be provided by controller manufacturer and is not included in this tender.

REQ-021367/A

The adapter parts shall be made of the same material as the flanges of the B4MAC cross (i.e. 1.4429-ESU / AISI 316LN ESR).

3.8. Gate valve and edge welded bellow

REQ-021368/A

The gate valve shall be of DN40 CF type and shall have a window with a diameter of at least 10 mm.

REQ-021369/A

The gate valve shall be manually operated.

REQ-021370/A

The edge welded bellow shall have DN40 CF mounting flanges.

REQ-021371/A

The contracted length (knife edge to knife edge) of the edge welded bellow shall be > 45 mm and < 60 mm.

REQ-021372/A

The extended length (knife edge to knife edge) of the edge welded bellow shall be > 70 mm and < 100 mm.

3.9. Vacuum leak tests

REQ-021377/A

The Supplier shall perform a leak test on the System and provide a test report containing the total leak rate and the RGA spectrum after 30 minutes and 15 h of pumping.

REQ-021378/A

After 30 min of pumping the mass 18 amu (peak) of the leak-free System shall reach a pressure below $5 \cdot 10^{-6}$ mbar using a TMP smaller or equal to 700 l/min.

4. Building and Environmental conditions

REQ-021373/A

The System shall be suitable for operation in the building and environmental conditions of the CA.

NOTE: For further information regarding building and environmental conditions see the document "E1 room datasheet" (RD-02).

5. Delivery requirements

REQ-021374/A

Each item shall be cleaned and packaged in clean environment of class 7 according to ČSN EN ISO 14644 (equivalent to ISO 14644) or cleaner.

NOTE: If the Supplier cannot fulfill class 7 cleanliness requirements, the Supplier and the CA shall agree on the cleaning method to be used to clean the System without decreasing the Systems' properties and to avoid contamination of the clean space of the CA.

REQ-021375/A

The System shall be delivered in protective package preventing damage and contamination with a minimum of two plies separate clean packaging (see REQ-021374/A).

REQ-021376/A

The transportation to the final destination shall be conducted by the Supplier.

6. Safety Requirements

REQ-021379/A

The Supplier shall supply a Declaration of Conformity or any other equivalent document legally recognized and accepted in the Czech Republic for each product type if the appropriate legislation determines the Supplier's obligation to have a Declaration of Conformity (or the equivalent document) for the purposes of a Device sale in the Czech Republic to fulfil the requirements of 2001/95/EC directive or applicable Czech law.

7. Quality Requirements

7.1. General Quality Requirements

REQ-021381/A

The Supplier shall provide a Product User Manual as part of the delivered System. The Manual shall include the instructions and descriptions regarding the following procedures:

- transport, handling, storage, cleaning and installation;
- all approved "requests for deviation/wavier";
- safe operation and maintenance procedures.

REQ-021382/A

The Supplier shall provide information on execution of outgoing check of the product. At least this information shall comprise declaration about execution of outgoing check and declaration of conformity with technical requirements defined by the product RSD and completeness of the product.

REQ-021383/A

The Supplier shall provide a report outlining the results of any testing executed on all components of the System provided by the Supplier to confirm specification conformity.

7.2. Documentation and data control

REQ-021386/A

The Supplier shall provide with the delivery of the System the following types of documents:

- the updated manufacturing drawings (3D model and 2D drawings) in electronic form as defined in REQ-021387/A and REQ-021330/A;
- Test report (see REQ-021377/A, REQ-021378/A and REQ-021383/A).

REQ-021387/A

The Supplier shall use following data formats:

- *.JPG, *.PNG, *.PDF/A, *.HTML;
- CAD 2D: *.dwg;
- CAD 3D: STEP type files (*.stp;*.ste;*.step);
- text processors *.doc, *.docx, OpenDocument Format;
- spreadsheet processors *.xls, *.xlsx, OpenDocument Format;
- presentations *.ppt, *.pptx; OpenDocument Format.

7.3. Non-Conformance Control System

REQ-021385/A

The Supplier shall establish and maintain a non-conformance control system compatible with ČSN EN ISO 9001 (equivalent to EN ISO 9001).

7.4. Specific Quality requirement

REQ-021384/A

In case of a warranty repair of the System by the Supplier, the Supplier shall redo necessary parts of the verification procedure. The results of this process shall be provided to the CA.

7.5. Acceptance

The Acceptance phase (as defined in the Contract) shall demonstrate following:

- Final delivered System have been successfully verified and this process has been documented in an appropriate way;
- All detected non-conformities have been solved in accordance with REQ-021331/A, REQ-021383/A and REQ-021385/A;
- The final System is free of fabrication errors and is ready for the intended operational use.

Acceptance will be carried out by the CA (or external contractors if required) on the final delivered complete System.

In case of successful acceptance phase the CA shall provide to the Supplier signed acceptance protocol.

In case of unsuccessful acceptance stage the CA shall provide to the Supplier Non-Conformance Report (NCR) and ELI non-conformance control process shall be applied (see REQ-021385/A).

REQ-021388/A

Upon delivery of the final System in appropriate and undamaged packaging the CA shall provide to the Supplier with Handover / takeover protocol.

REQ-021389/A

Acceptance shall be complete when the final System complies with all specifications verified by the Supplier's outgoing tests (see REQ-021382/A) and by passing additional acceptance verification carried out by the CA after delivery and installation at its own premises.

NOTE 1: Supplier's outgoing tests shall be carried out prior to delivery.

NOTE 2: In the acceptance phase, the verification of the final System and required documentation will be carried out by the CA within 4 weeks after the issuing of the Handover/takeover protocol.