APPROVED
at the Procurement Commission meeting
February 26, 2013, Minutes No. LU CFI 2013/8/ERDF_1

Open Tender of the
Institute of Solid State Physics University of Latvia

"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

REGULATION

Procurement ID No.: LU CFI 2013/8/ERDF

Procurement will be performed within the ERDF Project
"Development of Scientific Infrastructure for the National Research Centre of Nanostructured and Multifunctional Materials, Constructions and Technologies"
(Project No.: 2011/0041/2DP/2.1.1.3.1/11/IPIA/VIAA/004)

The text of present regulation, where it differs from the text of regulation of the previous, terminated procurement No. LU CFI 2013/2/ERAF, is highlighted in yellow.

Riga, 2013

Contents

I GENERAL INFORMATION

1.1. Procurement Identification Number: **LU CFI 2013/8/ERDF**

1.2. **Contracting Authority**

Name	Institute of Solid State Physics University of Latvia (hereinafter - the ISSP)
Address	Kengaraga street 8, Riga, LV-1063, Latvia
VAT Reg. No.	LV90002124925
Telephone	+371 67187816
Fax	+371 67132778
e-mail	ISSP@cfi.lu.lv
Internet address	www.cfi.lu.lv
Contact person	Janis Pinnis, Secretary of the Procurement Commission
Telephone	+371 67260545
Fax	+371 67132778
e-mail	Janis.Pinnis@cfi.lu.lv
Working hours	8:30-17:00

1.3. **Subject of the procurement** –
Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings.

CPV reference number: 31712000-0.

1.4. T**he place of the Contract performance:** the premises of the ISSP, Kengaraga street 8, Riga, Latvia.

1.5. **Schedule**

Activity	Date	Time**
Requests for additional information regarding the Regulation shall be submitted by*	*	
Deadline for providing clarifications to the interested persons	05.04.2013	
Deadline for the submission of bids	11.04.2013	10:00
Meeting of Bids opening	11.04.2013	10:00
Sending a notice of tender results	25.04.2013 (tentative)	
Entering into the Contract	07.05.2013 (tentative)	
Time of delivery as of the day entering into the Contract	18 (eighteen) months (time of delivery can be extended, but not more than for 6 (six) months)	

* Request is deemed to be submitted if written request is received from the Tenderer (a letter, fax or e-mail). The requests for additional information in relation to the Regulation should be submitted to the Commission in due time, considering that the Commission is not entitled to furnish additional information later than 6 (six) days prior to the deadline for the submission of bids.

** Latvian time

1.6. The present method of the procurement is an open tender regulated by the Republic of Latvia Law "On Public Procurement". The Tender is organised by the Procurement Commission (hereinafter - the Commission) of the Institute of Solid State Physics University of Latvia (hereinafter - the ISSP), established by the Director of ISSP Order No. 5-v dd. 20.02.2012 (Paragraph 2).

II THE OFFER DOCUMENTS AND SUBMISSION AND OPENING OF OFFERS

2.1 The requirements regarding the contents of the Offer documents.

2.1.1 The Offer shall be submitted in the full amount. The Tenderer may submit only one Offer. The Offer shall not comprise several versions of the Technical Bid or the Financial Bid.

2.1.2 The Offer documents shall comply with the requirements included in the present Regulation and shall comprise the following:

1) application for participation in the present Tender to be filled in on the form enclosed as Annex 3.1 to the present Regulation;

2) documents certifying the qualifications of the Tenderer (see Section IV herein);

3) the Technical Bid, that shall be prepared considering all the requirements of the Technical Specification (Annex 1 to the present Regulation); the Technical Bid shall be filled in on the form enclosed as Annex 4 to the present Regulation; the Technical Bid shall be signed;

4) the Financial Bid, that shall be filled in on the form of enclosed as Annex 5 to the present Regulation; the Financial Bid shall be signed;

5) a bank's or another credit institution's or insurance company's (hereinafter – a bank) letter of intent stating that it undertakes to issue the Advance Payment Guarantee to the Tenderer, stipulating the repayment of the advance payment with no additional provisions not later than within 10 days following the receipt of the Contracting Authority's request. Contracting Authority shall request the repayment of the advance payment if the conditions stated in Item 5.4 of Annex 2 to the present Regulation take effect.

2.1.3 The application for participation in the Tender shall be signed. If the Offer documents are submitted by a group of persons, the application for participation in the Tender shall be signed by all persons of the group.

2.1.4 The Offer documents shall be signed by the signatory or the Tenderer's authorised person. Where the Offer documents are signed by an authorised person, the authorisation or a copy of the authorisation certified in accordance with the procedure stipulated by the laws and regulations shall be annexed to the Offer documents.

2.1.5 The Offer documents shall be permanently bound together in such a way that pages may not be replaced or removed; the pages shall be numbered. If the Tenderer encloses the promotional materials, brochures, catalogues, etc., which are not bound together, the Tenderer's name shall be indicated on every document enclosed thereto.

2.1.6 The Offer documents shall be drawn up in the Latvian or English language subject to the requirements of the record-keeping, in 3 (three) paper copies:

1) an original (marked "Original"),

2) 2 (two) copies (marked "Copy"),

The Offer shall be annexed with the Technical Bid and Financial Bid in electronic form (if possible – in the format of MS Word or MS Excel) on CD/DVD. The electronic version of the documents is provided for the processing of information only and shall be not signed. The Tenderer's name and the mark "LU CFI 2013/8/ERDF" shall be indicated on the respective CD/DVD.

2.2 The place and procedure of submitting the Offer: the Offer shall be submitted to the Secretariat of the ISSP, Room 204, 2nd floor, Kengaraga street 8, Riga,

LV-1063 until the time and the date specified in Item 1.5 of this Regulation. The Offer shall be submitted on business days from 8:30 to 17:00.

The Offer may be sent in a registered letter, by courier service or delivered in person.

All samples of the Offer shall be submitted (sent) in one closed and sealed envelope. The following information shall be indicated on the envelope:

1) Institute of Solid State Physics University of Latvia, Kengaraga street 8, Riga, LV-1063, Latvia.
2) The Tenderer's name and address,
3) The mark: "For the Tender "Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings" (LU CFI 2013/8/ERDF)".

2.3 The Offer validity term: 3 (three) months from the day of opening the Offer. The Offer shall not stipulate bid bond.

2.4 The place and date of opening the Bids: The Bids will be opened in the premises of the ISSP: in the Deputy Director's office, 2nd floor, Kengaraga street 8, Riga, and will begin at the time and on the date stated in Item 1.5. The meeting of opening the Bids is open and all the interested persons may participate therein.

III INFORMATION ON THE SUBJECT OF THE PROCUREMENT

3.1 The subject of the procurement: The Multifunctional Cluster Plant for Deposition of Vacuum Coatings, 1 set.

Delivery shall be made in accordance with the requirements stated in the Technical Specifications (enclosed as Annex 1 hereto) and the draft Contract (enclosed as Annex 2 hereto).

3.2 Procurement will be performed within the ERDF Project "Development of Scientific Infrastructure for the National Research Centre of Nanostructured and Multifunctional Materials, Constructions and Technologies"
(Project No.: 2011/0041/2DP/2.1.1.3.1/11/IPIA/VIAA/004).

IV THE QUALIFICATION REQUIREMENTS AND THE TENDERERS' SELECTION

4.1 The Contracting Authority shall examine Offers submitted by the Tenderers, who conform to the requirements stipulated by this Section and have been selected in accordance with the procedures indicated in the present Regulation.

4.2 **Conditions for Excluding a Tenderer**.

A Contracting Authority shall exclude a Tenderer from further participation in a procurement procedure and shall refuse to consider the said Tenderer's bid if:

4.2.1 the Tenderer has not been registered in accordance with the requirements of laws and regulations;

4.2.2 pursuant to a court judgement or an injunction of a public prosecutor regarding a penalty, which has come into effect and become incontestable and and non-appealable, the Tenderer or the Tenderer's official has been found guilty of having links to criminal offences of corruptive character, fraudulent activities in financial matters, laundering of proceeds derived from crime or implication in a criminal organisation (except as provided by Clause 1, Paragraph 4, Section 39 of the Public Procurement Law);

4.2.3 pursuant to a decision made by a competent institution or a court judgement, which has come into effect and become incontestable and non-appealable, the Tenderer has been found guilty of significantly violating the employment rights related to: 1) employment of one or several citizen(s) or subject(s) other than citizens or subjects of the Member States of the European Union, where they stay illegally in the territory of the Member States of the European Union; 2) employment of one person without entering into the employment contract in writing, where such a violation is established repeatedly in the course of a year, or employment of two or several persons without entering into the employment contract in writing (except as provided by Clauses 1 and 2, Paragraph 4, Section 39 of the Public Procurement Law);

4.2.4 pursuant to a decision made by a competent institution or a court judgement, which has come into effect and become incontestable and non-appealable, the Tenderer has been found guilty of violating the competition rights related to the vertical agreement aimed at limiting a buyer's opportunity to fix a resale price or the horizontal cartel agreement except for the case when the respective institution, upon establishing a violation of the competition rights, has exempted the Tenderer from a penalty (except as provided by Clause 3, Paragraph 4, Section 39 of the Public Procurement Law);

4.2.5 an insolvency process of the Tenderer has been declared or the Tenderer's business activity has been suspended or terminated, a case has been brought against the Tenderer to declare it bankrupt or it is established that the Tenderer will be liquidated until the expected expiry date of the agreement performance (the Contracting Authority may decide on not excluding the Tenderer from the procurement procedure pursuant to this Paragraph in cases as provided by Paragraph 3, Section 39 of the Public Procurement Law);

4.2.6 the Tenderer has tax arrears, including compulsory social security contribution arrears (exceeding 100 lats in total in each country) in Latvia and in the country, where the Tenderer is registered or where it has its residence (in case if the Tenderer is not registered in Latvia or Latvia is not its residence country);

4.2.7 the Tenderer has provided false information with respect to its qualifications or has not submitted the required information at all;

4.2.8 as otherwise provided by the Public Procurement Law;
4.2.9 the conditions referred to in Paragraphs 4.2.2-4.2.7 are applicable to the member of the partnership if the Tenderer is the partnership and to the person indicated by Tenderer, on whose abilities the Tenderer is relying on in order to confirm that the qualification thereof conforms with the requirements specified in the procurement procedure documents.

4.3. In order to evaluate a Tenderer in accordance with Item 4.2., the Tenderer shall submit the following information along with the Offer:

4.3.1 a copy of the Tenderer's registration certificate;

4.3.2 a statement by the Tenderer that the circumstances referred to in Paragraphs 4.2.2 – 4.2.6 of the Regulation do not apply to the Tenderer;

4.4. The Contracting Authority shall be entitled to request a Tenderer to submit the following documents within 15 (fifteen) business days:

4.4.1 a certificate issued by the Competent Authority no earlier than one month prior to the submission day to the effect that an insolvency process of the Tenderer has not been declared and that the Tenderer is not undergoing liquidation (in cases as provided by Paragraph 8, Section 39 of the Public Procurement Law);

4.4.2 a certificate issued by the State Revenue Service no earlier than one month prior to the submission day to the effect that the Tenderer (regardless of whether the Tenderer is registered

in Latvia or Latvia is Tenderer's residence country) and the person mentioned in Paragraph 4.2.9 of the Regulation has no tax arrears, including social security contribution arrears, exceeding 100 lats in total in Latvia (in cases as provided by Paragraph 8, Section 39 of the Public Procurement Law);

4.4.3 a certificate issued no earlier than one month prior to the submission day to the effect that the Tenderer registered in foreign country or having that country as residence country and the person (in the respective country) mentioned in Paragraph 4.2.9 of the Regulation has no tax arrears, including social security contribution arrears, exceeding 100 lats in total in the respective country (in cases as provided by Paragraph 8, Section 39 of the Public Procurement Law);

4.4.4 latest financial statements (including the balance sheet, profit and loss statement, cash flow statement, report on changes in equity and appendices) submitted to the State Revenue Service or an equivalent tax administration authority in any other country by the Tenderer, and the relevant auditors' opinion (if any).

4.5. Information Regarding the Economic and Financial Status of a Tenderer

4.5.1 The economic and financial status of a Tenderer shall comply with the following conditions: the annual average financial turnover of similar (in this Regulation the vacuum technological equipment and equal goods ar regarded as similar to the subject of the procurement) goods of the Tenderer for the previous 3 (three) years shall exceed the bid amount.
4.5.2 For the purpose of evaluating the Tenderer's economic and financial status, the Tenderer shall submit the following along with the Offer: a statement regarding the Tenderer's average annual financial turnover of similar goods during the previous 3 (three) years. Tenderer, whose period of operation is less than 3 (three) years, shall submit a statement regarding the Tenderer's financial turnover during the period of its operation.

4.5.3 The Tenderer may rely on the capabilities of other undertakers, if necessary for the performance of the particular contract, independent of the legal nature of their relationship. In such a case the Tenderer shall provide explicit proof to the Contracting Authority of the necessary resources at its disposal by submitting the respective undertaker's certification or arrangement for the cooperation regarding the performance of the particular contract.

4.6. Information on the Tenderer's Capabilities

4.6.1 The Tenderer's capability to delivery the research equipment shall conform to the following terms and conditions:

4.6.1.1 The Tenderer shall have the experience in the delivery of similar goods; the contract sum of at least one contract shall be not less than the sum offered here;

4.6.1.2 The Tenderer shall have qualified personnel to be employed in the installation of the offered equipment and warranty repair work;

4.6.1.3 The manufacturer or an authorized distributor of the offered equipment shall assume a warranty or ensure it through a partner, where the Tenderer fails to provide it (e.g., in case of insolvency/ bankruptcy).

4.6.2 For the purposes of evaluating the Tenderer's capabilities, the Tenderer shall submit the following along with the Offer:

4.6.2.1 A list of the performed 3 to 5 main contracts on the delivery of similar goods during the previous 3 (three) years and current year pursuant to Annex 3.2 to the Regulation;

4.6.2.2 At least 2 (two) positive customer references on the above mentioned (item 4.6.2.1) main contracts performed during the previous 3 (three) years and current year;

4.6.2.3 A list of the Tenderer's technical personnel to be employed in the installation of the equipment and warranty repair work pursuant to Annex 3.3 to the Regulation (a list shall be annexed with copies of documents certifying the qualifications or information on the experience of the above personnel in performing a similar work, certified by the Tenderer);

4.6.2.4 The document issued by the manufacturer or the authorized distributor of the offered equipment (if the Tenderer isn't a manufacturer or an authorized distributor), where the manufacturer or the authorized distributor shall specify an alternative for providing a warranty (the manufacturer or the authorized distributor shall assume a warranty or ensure it through a partner), where the Tenderer fails to provide it (e.g., in case of insolvency/ bankruptcy).

4.6.2.5 The Tenderer may rely on the capabilities of other undertakers, if necessary for the performance of the particular contract, independent of the legal nature of their relationship. In such a case the Tenderer shall provide explicit proof to the Contracting Authority of the necessary resources at its disposal by submitting the respective undertaker's certification or arrangement for the cooperation regarding the performance of the particular contract.

4.7. Additional Information

4.7.1 If the information submitted by the Tenderer in accordance with Items 4.3, 4.4, 4.5 and 4.6 of this Regulation, is insufficient to determine whether the conditions referred to in Item 4.2 herein, are applicable to the Tenderer, or in order to evaluate the economic and financial status and capability of the Tenderer, the Contracting Authority shall request the Tenderer to explain the information submitted or submit additional information within the scope specified in the above referred Items.

4.7.2 In order to determine whether the cost of a Offer received is unreasonably low, the Contracting Authority shall request the Tenderer, who has submitted the Offer with the lowest price, to submit a description of the specific market conditions available only to this Tenderer, that substantiates the price reduction.

4.8. Exclusion from Participation in the Procurement Process

4.8.1 If the conditions referred to in Item 4.2 herein, apply to the Tenderer or the Tenderer's economic and financial status and capabilities do not conform to the conditions of Item 4.5 and Item 4.6 herein, the Contracting Authority shall take a decision not to examine the Tenderer's Bid and to exclude the Tenderer from further participation in the procurement procedure.

4.8.2 If a Tenderer has submitted an Offer of unreasonably low cost, the Contracting Authority shall exclude the Tenderer from further participation in the procurement process.

4.8.3 If a Tenderer requests the Contracting Authority to explain the decision that has been taken in accordance with Item 4.8.1 and Item 4.8.2 herein, the Contracting Authority shall, within a period of three days from the receipt of the request, provide a written substantiation of the decision.

V EVALUATION OF THE OFFERS AND THE REQUIREMENTS SET FOR THE TENDERERS

5.1. The submitted Offers that have passed the qualification test (Tenderer`s selection; Section IV) and conform to the requested technical specification (Annex 1) shall be evaluated according to the sole criterion – **the lowest price. The Total prices of the Plant in lats (LVL), VAT excluded, will be compared.** The price set in euros, USD or GBP will be

converted in lats according to the exchange rate fixed by the Bank of Latvia on the day of opening the bids.

5.2. The winner of the competition shall be acknowledged the Tenderer who has submitted the Offer with the lowest price, which is determined by taking into consideration Item 5.1 herein.

5.3. The Tenderer shall provide for the permanence of the price tendered at the Tender during the entire compliance with the Procurement Contract. The potential inflation, alteration of the market conditions or any other conditions shall not be the basis for the increase of the prices and the consequences caused by the above processes shall be projected and estimated by the Tenderer when compiling the Financial Bid.

VI RIGHTS AND OBLIGATIONS OF THE COMMISSION

6.1. The Offer shall be evaluated and the selected Tenderer shall be determined by the Commission established subject to the instructions by the Director of the Institute of Solid State Physics University of Latvia.

6.2. The Commission shall have the rights to decline a further evaluation of any Offer, if it is identified that the Offer is incompliant with any requirement stipulated by the present Regulation or the regulatory enactments of the Republic of Latvia, or contains false information.

6.3. If the Commission shall have doubts about the authenticity of the submitted copy of the document, it shall request the Tenderer to present the original document or submit a verified copy of the document.

6.4. The Commission shall be entitled to invite specialists or experts with advisory rights for the performance of its work. An expert shall provide a written evaluation. The evaluation shall be enclosed to the Minutes of the Commission meeting. The expert's evaluation shall not be binding on the Commission.

6.5. The Commission may make amendments to the Regulation or extend the term for submission of the Tender. Information regarding amendments to the Regulation and extension the term for submission of the Tender shall be published on the Procurement Monitoring Bureau's website (www.iub.gov.lv) and on the Contracting Authority's website (www.cfi.lu.lv/iepirkumi).

6.6. If the information of the documents submitted by the Tenderer is insufficient, the Commission may request an additional information, thereby stipulating the term and place for the submission of an additional information.

6.7. If the Tenderer fails to submit the information or clarifications requested by the Commission, the Commission shall evaluate the Offer according to the documents included in the Offer.

6.8. The Commission shall reserve the rights to terminate the procedure without selecting any Offer.

6.9. After the performance of all the checks, thereby applying the criteria of the Offer evaluation and the comparison indicated in Section V, the Commission shall have the right to take one of the following decisions:

- to enter into the Procurement Contract with the Tenderer;
- to terminate the Tender without selecting any Bid;

6.10. The Commission shall publish its decision (Item 6.9) on the Contracting Authority's website (www.cfi.lu.lv/iepirkumi) and send a written notification of its decision to all Tenderers and Procurement Monitoring Bureau within three business days.

6.11. If the Procurement Monitoring Bureau or the Contracting Authority receives no complaint from the Tenderer about the activities of the Contracting Authority with respect to the legality of the Tender within 10 (ten) days and 1 (one) weekday from the day of publishing the notification about the decision-taking on the Procurement Monitoring Bureau's website, the Contracting Authority shall enter into the Procurement Contract with the selected Tenderer.

VII RIGHTS AND OBLIGATIONS OF THE TENDERERS

7.1. The participation in the Tender shall be the Tenderer's free will.

7.2. The Tenderer shall have the rights to challenge the requirements of the Tender Regulation by submitting a complaint to Procurement Monitoring Bureau pursuant to the procedure stipulated by Section 83 of the Republic of Latvia Public Procurement Law no later than 10 days before the deadline for the submission of bids.

7.3. Submitting the Offer for participation in the Tender, the Tenderer shall accept in full and shall be prepared to comply with the requirements of the present Regulation and the regulatory enactments on the state or local government procurement.

7.4. The Tenderer shall have the rights to appeal against the decision taken by the Commission subject to the procedure stipulated by the Law "On Public Procurement".

7.5. The Tenderer may change or withdraw the Offer after its submission on condition that the Tenderer submits a written notification about the changes (or withdrawal) until the expiry of the Offer submission term.

7.6. The Offers shall not be amended or supplemented after the expiry of the Offer submission term.

VIII CONTRACT CONDITIONS

8.1. The aim of entering into a contract shall be the stipulation of all the legal, property, financial and other relationship that may arise upon the performance of the procurement for the needs of the Contracting Authority.

8.2. The draft Procurement Contract is enclosed in Annex 2 herein.

8.3. If the Tenderer has objections to the annexed draft Procurement Contract, the above shall be submitted as soon as possible to enable the Contracting Authority to make amendments to the Tender Regulation if necessary. The objections regarding the draft Procurement Contract specified in the Offer or submitted after the opening of the bids shall not be taken into account.

8.4 The aim of the Contracting Authority is to purchase the whole Multifunctional Cluster Plant for the Deposition of Vacuum Coatings as described in the Technical Specification. However, if the financing is insufficient, the Contracting Authority shall retain the right to buy the Plant in parts, depending on the availability of financing or to buy an incomplete set. The minimum initial set of the purchase shall be as follows (subject to Part 2 of the Technical Specification):

1 Central chamber – transfer of the sample;
2 1st processing chamber – input/output of the sample and ion treatment;
3 2nd processing chamber – thermal sublimation of organic substances;
4 4th processing chamber – magnetron sputtering (with three (3) power sources);
5 Electric and management systems lockers;
6 Distilled water contour;
7 Plant management/control working station;
8 Complete set of spare parts.

Other chambers of the Cluster Plant: 3rd processing chamber – evaporation of metals and 5th processing chamber – magnetron sputtering (deposition of silicon PIN structures), if the above chambers are not purchased simultaneously with the Plant, will be purchased as soon as possible, depending on the availability of financing. If these chambers are not purchased all at once, the sequence of their purchase shall be subject to the above list.

ANNEX 1
to the Regulation of the Open Tender LU CFI 2013/8/ERDF
"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

MULTIFUNCTIONAL CLUSTER PLANT FOR DEPOSITION OF VACUUM COATINGS

TECHNICAL SPECIFICATION

CHAPTERS

4.6. 3rd processing chamber – metal evaporation
4.7. 4th processing chamber – magnetron sputtering
4.8. 5th processing chamber – magnetron sputtering (deposition of silicon PIN structures)
4.9. Pumping system
4.10. Engineering communications

5. ELECTRIC AND MANAGEMENT SYSTEM

6. PLANT ACCEPTANCE/DELIVERY AT THE TENDERER

(As a rule, such plants are delivered and installed by the producer of the plant. In case the Tenderer isn't the producer, in present Technical Specification somewhere with the term "Tenderer" one shall understand „producer or Tenderer", as for some Items of Technical Specification a priori isn't clear will they be related with producer or with Tenderer. If the Tenderer is not the producer of the plant, it can in its offer substitute the term „Tenderer" with the term „producer" of necessity.)

7. PLANT ASSEMBLING, ADJUSTMENT AND DELIVERY AT THE CUSTOMER

8. TRAINING OF THE PERSONNEL

9. DRAWINGS AND TECHNICAL DOCUMENTATION

10. PACKING, TRANSPORTATION AND STORAGE

11. GUARANTEE

0. GENERAL REQUIREMENTS

0.1. Undefined requirements

Where any technical requirement referring to the present Contract is not defined in the Technical Specifications, it shall comply with the minimum generally accepted requirements or standards.

0.2 Technical condition of equipment to be delivered

The equipment to be delivered shall not be previously used, the used or the renovated parts shall not be built therein.

1. TYPE and POSSIBILITIES OF THE APPLICATION

1.1. Type of the application

The cluster plant for making of vacuum coatings (hereinafter - the plant) is an R&D plant for laying of various multifunctional coatings by use of 3 methods: substance evaporation, magnetron sputtering and sublimation. The sample is an up to 50x50 mm large, solid, flat material suitable for deposition of the coating in vacuum. The plant is envisaged for scientific research works.

1.2. Possibilities

1.2.1. The plant is a supplemental, modular and flexible system. In its base there is a central chamber to which it is possible to attach even up to 8 processing chambers of which one is foreseen for fulfilment of input/output functions.

1.2.2. Each processing chamber is equipped with a central chamber shutter and may be operated independently of the others.

1.2.3. Input of the sample may be performed through the input/output and further through the central chamber without access of air to the concrete processing chamber or either by using any processing chamber door by prior to it admitting air into the processing chamber. Input/output of the sample takes place without stopping vacuum pumps.

1.2.4. The plant is of a simple design, conveniently serviceable, with a flexible and adaptable construction.

1.2.5. Central chamber and processing chambers are equipped with windows.

1.2.6. Coating deposition processing chambers are elaborated according to a unified design and the process equipment (evaporators, sublimation cells and magnetrons) are located on equal shutting covers in order in case of necessity one and the same equipment could be used in another processing chamber or either to perform a quick replacement of the processing equipment.

1.2.7. Coating deposition processing chambers are equipped with 2 additional flanges to be used for mounting of additional equipment and measuring instruments.

1.2.8. Design of the chamber is elaborated so let the plant would be conveniently serviceable, visually clear, and easily manageable.

1.2.9. The plant is envisaged both for operation in ordinary interior space and in a cleanroom.

1.2.10. In order to ensure a more convenient, quicker and safer servicing of chambers, chambers are equipped with easily removable protection screens of interior surfaces.

2. COMPLETENESS

2.1. Central chamber – transfer of the sample

In Tenderer's technical specification indicated there are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of air for ventilation, viewing windows.

2.2. 1st processing chamber – input/output of the sample and ion treatment

In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, ion treatment, delivery of gases, delivery of air for ventilation, viewing windows.

2.3. 2nd processing chamber – thermal evaporation of organic compounds

In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of gases, making of coatings and control of the making process, delivery of air for ventilation, viewing windows.

2.4. 3rd processing chamber – metal evaporation

In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of gases, deposition of coatings and control of the deposition process, delivery of air for ventilation, viewing windows.

2.5. 4th processing chamber – magnetron sputtering

In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of gases, deposition of coatings and control of the deposition process, delivery of air for ventilation, viewing windows.

2.6. 5th processing chamber – magnetron sputtering (for obtaining of silicon PIN structures)

In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of gases, deposition of coatings and control of the deposition process, delivery of air for ventilation, viewing windows.

2.7. Electric and management systems lockers

2.8. Distilled water cooling system, including a chiller

2.8.1. For magnetron cooling
2.8.2. For cooling of turbo molecular pumps
2.8.3. For cooling of quartz resonators for the measuring of the speed of deposition

2.9. Plant management/control working station

2.10. Complete set of spare parts

<u>The customer shall ensure:</u>

- Space (premises) suitable for installation
- Engineering communications
- Exhaust gases after treatment
- Evaporation and sputtering materials
- Gas/gases mixtures

3. TECHNICAL DATA

3.1. Substrate

3.1.1. Substrate properties and dimensions

Material	Glass, metal or another solid, flat, suitable for vacuum processes base
Dimensions, mm	25x25 and 50 x 50
Thickness, mm	Up to 2
The uncoated zone (if needed) mm	Is to be indicated in Tenderer's specification

3.1.2. Substrate carrier (Sample holder)

Material	Is to be indicated in Tenderer's specification
Dimensions, mm	Is to be indicated in Tenderer's specification

3.2. Central chamber – transfer of the sample

Base pressure, Torr	Not higher than 1x 10^{-6}
Transportation system	Is to be indicated in Tenderer's specification
Storage of samples	Cassette for storage of 5 up to 10 samples

3.3. 1st processing chamber – input/output of the sample, ion treatment

3.3.1. Substrate surface treatment

Treatment type	Ion flow
Ion sources quantity, pcs	1
Distance between the source and the sample, mm	100…150
Ion beam energy, eV	Up to 230
Ion beam power, W	Up to 1500
Ion beam maximum spreading angle, degrees	Below 80
Base pressure, Torr	Not higher than 1x 10^{-6}
Working pressure, Torr	$1x10^{-4}$
Process gases	Ar, O_2
Gas flow, sccm	Ar - max 30 O_2 - max 30
Mass flow controllers, pcs	2
The number of sample places, pc	1

3.4. 2nd processing chamber – thermal evaporation of organic compounds

3.4.1. Coating

Material	Organic compounds suitable for evaporation
Coating homogeneity, %	± 5

3.4.2. **Evaporation**

Evaporation element type	Crucible type evaporator with shutter
The number of evaporation elements with shutters, pcs	3
Crucible inner capacity, cm^3	not more than1.2
The number of evaporators feeding sources, pcs	3 or 1 switchable
Form of the to-be-evaporated material	Powder, granules and other
Base pressure, Torr	Not higher than $1x\ 10^{-6}$
Working pressure, Torr	$5x\ 10^{-6}$ to $1x10^{-4}$
Evaporation temperature, ^oC	Up to 600
Process gases	N_2
Gas flow, sccm	Up to 20
Mass flow controllers, pc	1
Distance from the evaporator up to the sample, mm	100-250
The number of substrate places, pcs	3 with place of masks
Additional shutters	3 additional shutters, one in front of each substrate.
Distance between substrate and mask	Direct contact
Crucibles for evaporation of organic compounds, pcs	10

3.4.3. **Sample heating/cooling**

Sample temperature, ^oC	Maximum +60, minimum - 40
Heater/cooler type	Indicated in Tenderer's specification
Quantity of thermocouples for measuring of heater/cooler and substrate temperature, pcs	2

3.4.4. **Measuring instruments**

Quartz crystal resonance deposition speed and thickness measuring instruments, pcs	3
Quartz crystals for resonator, pcs	15
Resolution of deposition speed, Å/s	≤ 0.1
	Provide start of deposition at the certain coating rate

3.5. 3rd processing chamber – metal evaporation

3.5.1. Coating

To-be-evaporated material	Au, Ag, Al, Pd, Cu, Ni u.c.
Coating homogeneity, %	± 5

3.5.2. Thermal evaporation

Evaporation element type	Resistive evaporators. At least two of them should be crucible type
Number of evaporators, pcs	4
Number of shutters, pc	1
Crucible inner capacity, cm^3	not more than1.2
Base pressure, Torr	Not higher than $1x\ 10^{-6}$
Working pressure range, Torr	$1x\ 10^{-5}$ to $1x10^{-4}$
Number of evaporator feeding sources, pcs	4
Evaporation temperature, °C	Up to 1500
Distance from the evaporator up to the sample centre, mm	100…300
Number of sample places, pc	1 with place of mask
Distance between substrate and mask	Direct contact
Boron nitride crucibles, pcs	5
Aluminum oxide crucible, pcs	5
Quartz crucible, pcs	5
Molybdenum boats, pcs (if boats resistive evaporators are included)	20
Tungsten boats, pcs (if boats resistive evaporators are included)	20

3.5.3. Sample heating

Sample temperature, °C	Maximum 200
Heater type	The substrate may not be exposed to direct IR irradiation
The number of thermocouples for temperature measuring, pc	1
Maximum heater capacity, W	Indicated in Tenderer's specification
The number of heaters, pc	1

3.5.4. Measuring instruments

Quartz crystal resonance deposition speed measuring instruments, pcs	2 (1 on 2 sources with one power supply)
Quartz crystals for resonator, pcs	10

Resolution of deposition speed, Å/s	≤ 0.1
	Provide start of sample deposition at the certain coating speed

3.6. 4th processing chamber – magnetron sputtering

3.6.1. Coating

Materials	ITO, AZO, TiO_2, SiO_2, Al, Ti, et al.
Coating homogeneity, %	± 5

3.6.2. Magnetron sputtering

Coating deposition type	Material sputtering in the atmosphere of inert or reactive gas or their mixture
Magnetron type	A round flat target, diameter not less than 2 inches
The number of magnetrons, pcs	3
The number of shutters over the sample, pc	1
Medium distance from the target up to the sample, mm	100, with adjustment range ±50 mm
Magnetron target slope angle, degrees	5…30
Base pressure, Torr	Not higher than $1x\ 10^{-6}$
Working pressure range, Torr	$(0.2\text{-}4)\ x10^{-2}$
Process gases	Ar, O_2, H_2, N_2
Mass flow controllers, pcs	4
Power source	2 pc pulsed DC, 1 pc RF (manually switchable, jointly with the 5th processing chamber) 1 pc pulsed DC and 1 pc RF (codeposition from two synchronized DC and RF power supplies in one time)
Power, kW	As requested for the target size
The number of sample places, pc	1
Sample rotation speed, min^{-1}	Up to 10

3.6.3. Sample heating

Sample temperature, °C	Maximum 400
Heater type	Indicated in Tenderer's specification
The number of thermocouples for temperature measuring, pc	1
Maximum heater capacity, W	Indicated in Tenderer's specification
The number of heaters, pc	1

3.6.4. Measuring instruments:

Hardware for Plasma optical spectroscopy channels,	3 channels (1 channel at each magnetron)

excluding the spectrophotometers, pcs	

3.6.5. **Gas delivery system**

Gas flows range	Indicated in Tenderer's specification, corresponding to the used vacuum pumps and the necessary working pressure
Geometry of input of gases	Indicated in Tenderer's specification

3.7. 5th processing chamber – magnetron sputtering (for obtaining of silicon PIN structures)

3.7.1. **Coating**

Materials	Alloyed or pure silicon
Coating homogeneity, %	± 10

3.7.2. **Magnetron sputtering**

Coating deposition type	Material sputtering in the atmosphere of inert or reactive gas or their mixture
Magnetron type	A round flat target, diameter not less than 2 inches
The number of magnetrons, pcs	3
The number of shutters over the sample, pc.	1
Medium distance from the target up to the sample, mm	100, with adjustment range ±50 mm
Magnetron target slope angle, degrees	5…30
Base pressure, Torr	Not higher than $1x\ 10^{-6}$
Working pressure, Torr	$(0.2\text{-}4)\ x10^{-2}$
Process gases	Ar, H_2
Mass flow controllers, pcs	2
Power source	2 pc pulsed DC, 1 pc RF (manually switchable, jointly with the 4th processing chamber) 1 pc pulsed DC and 1 pc RF (codeposition from two synchronized DC and RF power supplies in one time)
The number of sample places, pc	1
Sample rotation speed, min^{-1}	Up to 10

3.7.3. **Sample heating**

Sample temperature, ^oC	Maximum 400
Heater type	Indicated in Tenderer's specification
The number of thermocouples for temperature measuring, pc	1
Maximum heater capacity, W	Indicated in Tenderer's specification

The number of heaters, pc	1

3.7.4. **Gas delivery system**

Gas flows range	Indicated in Tenderer's specification, corresponding to the used vacuum pumps and the necessary working pressure
Geometry of input of gases	Indicated in Tenderer's specification

3.8. Pumping system, flow regulators and pressure sensors

Base pressure in central and processing chambers	Not higher than 1x 10^{-6}
Pumping time for the processing chamber (from atmosphere to 1x 10^{-6}Torr)	< 45 min.

In Tenderer's technical specification there are indicated pumping system components (incl. names of models)

3.9. Plant dimensions

In Tenderer's technical specification indicated are dimensions of the plant and separate chambers

3.10. Engineering communications

3.10.1. **Electric connection**

Frequency, Hz	50 ± 0.2
Voltage, V Connection type	Indicated in Tenderer's specification
Installed capacity of the plant , kW	Indicated in Tenderer's specification

3.10.2. **Compressed air**

Pressure, bar	Requirements indicated in Tenderer's specification
Dew point temperature, ^{o}C	Requirements indicated in Tenderer's specification
Properties	Free from oil vapour and dust

3.11. Conditions of the use

Temperature, ^{o}C	20 ± 5
Relative moisture, %	The range indicated in Tenderer's specification

4. PLANT DESCRIPTION

4.1. General description

4.1.1. The plant is elaborated in accordance with ergonomic principles ensuring access to all parts of the plant for their servicing and replacement. All parts and equipment of the plant are envisaged for the concrete processes by complying with the requirements of the specific temperature, pressure and reactive environment.

4.1.2. All chambers are made of stainless steel. They are supported on several support legs. The interior surfaces of the chamber are electrically polished. All chambers are ensured with windows and lighting for viewing of the process and transfer of the sample.

4.1.3. The plant is of a modular design. All chambers of the process are easily removable.

4.1.4. The plant design shall foresee an input/output chamber equipped with the ion source for treatment of the sample surface, 4 processing chambers and 3 free places which in future may be used for attachment of other processing chambers. The central chamber is separated from processing chambers with a shutter valve through which ensured is placement of the sample into the processing chamber. Coating deposition processing chambers are equipped with additional 2 closed flanges.

4.1.5. Each processing chamber may operate in an independent, the so-called solo mode. The input/output chamber can be operated simultaneously with other chambers. Placement of the sample is possible either through the input/output chamber and further through the central chamber shutter valve by means of the sample transfer mechanism or by opening the chamber door and manually placing the sample on the sample holding table.

4.1.6. All processing chambers are equipped with in hinges secured doors enabling a possibility to easily get an access to the equipment available inside the chamber to place the mask and/or the sample onto the sample holding table in its foreseen place, in case of necessity to replace, to add the to-be-evaporated, to-be-sputtered material.

4.1.7. In the interior of the coating deposition processing chamber envisaged there are fixtures for fixing of the steel or other material plate-type screens facilitating cleaning of the chamber after performance of the process.

4.1.8. The organic compound thermal evaporation chamber substrate holding table is equipped with 3 positions for placement of the sample. The sample holding table is turn-able in order to ensure the placement of the sample over the necessary evaporation cell or a necessary position for transfer of the sample by the manipulator hand. The turning is ensured by the step driver.

4.1.9. In the metal thermal evaporation chamber and in the both magnetron sputtering chambers the sample holding table is equipped with one position for placement of the sample.

4.1.10. Mechanical motion (e.g., rotation) of the substrate holder is used in the metal thermal evaporation chamber and in both magnetron sputtering chambers to ensure a homogeneous coating.

4.1.11. In the metal thermal evaporation chamber and in the both magnetron sputtering chambers for heating of the sample used is the infrared heater.

4.1.12. In the organic substance thermal sublimation chamber heating/cooling of the sample takes place by using heat transfer agent circulation tubes. The base of the sample is in direct contact with the temperature controlled surface. In the cooling mode the cooling agent is gaseous or liquid-type. Precaution shall be taken to avoid water condensation in the cooling system.

4.2. Sample holder

4.2.1. A special sample holder will be used for sample transfer from one processing chamber to another. The sample holder is envisaged for 25x25 mm and 50x50 mm large samples. The size of the uncoated area (needed for sample fixture) is indicated in Tenderer's specification.

4.3. Central chamber – transfer of the sample

4.3.1. The central chamber is equipped with 8 flanges to which secured there are processing chambers.

4.3.2. Transfer of the sample is carried out by means of the sample transfer mechanism. In the central chamber located there is a cassette for storage of 5-10 samples.

4.4. 1st processing chamber – sample input/output, ion treatment

4.4.1. The first processing chamber is envisaged for input/output of the sample from the plant, for treatment of the sample surface by ion flow and for delivery of the sample to the central chamber.

4.4.2. In the ion treatment time the used process gases (Ar un O_2) are delivered by using two mass flow controllers (MFC).

4.5. 2nd processing chamber – organic compound thermal evaporation

4.5.1. The second processing chamber is envisaged for deposition of the organic substances onto the sample by use of 3 thermal sublimation cells.

4.5.2. Each sublimation cell is equipped with an individual shutter. 3 quartz resonance heads are monitoring the rate of deposition Additional central shutter being operated by a pneumatic drive is used to protect the sample before the rate is established.

4.5.3. In the chamber ensured is heating of the samples up to + 60^0 degrees and cooling up to -40^0 degrees by use of a plate-type heater/cooler with circulation tubes.

4.6. 3rd processing chamber – metal evaporation

4.6.1. The third processing chamber is envisaged for metal deposition by use of 4 evaporators.

4.6.2. In the chamber placed there are 4 evaporation sources and 4 quartz resonators. Between the resonators and the sample there is a shutter operated by a pneumatic drive.

4.6.3. In the chamber ensured is heating of the sample up to +200^0 degrees.

4.7. 4th processing chamber – magnetron sputtering

4.7.1. The fourth processing chamber is envisaged for deposition of various materials by use of 3 magnetrons.

4.7.2. In the chamber placed there are 3 magnetrons of which one or any two may operate simultaneously. The distance of the magnetron and its angle in relation to the sample may be altered. For the processing chamber delivered are 4 gases (Ar, O_2, N_2, H_2) by use of four gas flow controllers (MFC). Each magnetron has a separate gas distributor.

4.7.3. For ensuring of the coating deposition the 4th and 5th chamber is equipped with a common set of two pulsed DC power sources and one RF power source.

4.7.4. In the chamber ensured is heating of the sample up to + 400^0 degrees.

4.7.5. The chamber is equipped with 3 plasma optical emission spectroscopy channels (one for each magnetron).

4.8. 5th processing chamber – magnetron sputtering (for obtaining of silicon PIN structures)

4.8.1. The fifth processing chamber is envisaged for silicon based materials deposition onto the sample by use of 3 magnetrons. In the chamber it is envisaged deposition of coatings necessary for establishing of the PIN structure.

4.8.2. In the chamber placed are 3 magnetrons of which one or any two may operate simultaneously. The magnetron distance up to the sample and its angle in relation to the sample may be altered. To the processing chamber delivered are 2 gases (Ar, H_2) by use of two gas flow controllers (MFC). Each magnetron has a separate gas distributor.

4.8.3. For ensuring of the coating deposition process, the 4th and 5th chamber is equipped with joint two pulsing direct current power sources and one RF power source.

4.8.4. In the chamber ensured is heating of the sample up to + 400^0 degrees.

4.9. Pumping system

4.9.1. The central chamber and each processing chamber is equipped with an individual pumping system consisting of one mechanical pump and one turbo-molecular pump.

4.9.2. For the coating deposition processing chambers (2nd, 3rd, 4th and 5th processing chambers) between the chamber and the turbo-molecular pump installed there is a throttling valve. The pumping system in each chamber ensures the base pressure not higher than 1x 10^{-6} Torr.

4.9.3. The vacuum sensors in the coating deposition chambers and between the mechanical and turbo-molecular pumps are specified in the Tenderer's specification.

4.9.4. For air admission into the chamber there is envisaged an air supply valve and electromagnetic shutter valve.

4.10. Engineering communications

4.10.1. Electric cables, electric lines and gas lines as well as water and compressed air system engineering communications are mainly placed in distribution panels located over the plant or on the floor in compliance with customer's requirements.

4.10.2. Engineering communications attachment points are coordinated with the customer during the plant elaboration time.

5. ELECTRIC AND MANAGEMENT SYSTEM

5.1. The electric system is elaborated in accordance with 73/23 EEC directives.

5.2. The plant management system is PLC based.

5.3. The plant management system shall ensure the technological process management and control.

5.4. The management system shall ensure:

- Pumping system management;
- Manipulator management;

- Magnetron sputtering management;
- Heaters management;
- Organic sublimation cells (Organic Molecular Evaporator) management;
- Thermal evaporators management;
- Gas delivery system management;
- Ion source management;
- Water cooling system management.

5.5. Each plant chamber has an individual pumping system. The management system ensures management of all pumps, valves and pumping system shutters by controlling pressure in each chamber and in the pumping system lines. The status of pumps, valves and shutters is reflected in the visualisation system.

5.6. The management system ensures management of the drive of the manipulator located in the central chamber by ensuring transfer of samples to any processing chamber. Placement of samples in chambers is reflected in the visualisation system. If the sample is removed/placed in the processing chamber through the chamber door, the operator shall introduce its management system.

5.7. The management system ensures management of the sample heaters in the processing chambers by ensuring stabilization of the heaters temperature. Setting and reflection of heaters temperature parameters is performed by using the visualisation system.

5.8. The management system ensures management of the magnetron power sources by ensuring a possibility to alter magnetron mode by stabilisation of the power, voltage or the current intensity. Setting and reflection of magnetron operation parameters is performed by use of the visualisation system.

5.9. The management system ensures management of 3 thermal sublimation cells for deposition of organic coatings on the sample in the second processing chamber. The management system regulates and stabilises temperature in each crucible evaporator. Thermal sublimation cells operation parameters (temperature, capacity) are reflected in the visualisation system. Thickness of the coating is measured by use of quartz resonators and the measurements obtained are reflected in the visualisation system.

5.10. The management system ensures management of thermal evaporators in the third processing chamber by control of the coating thickness by use of quartz resonators. Setting of parameters is performed by use of the visualisation system.

5.11. The management system performs management of the mass flow controllers (MFC) by ensuring delivery of working gases into processing chambers. Gas delivery systems parameters are set and reflected by use of the visualisation system.

5.12. To ensure a better adhesion of the coating, in the first processing chamber there is performed treatment of the sample with ion flow. The management system performs management of ion sources with parameters control and process gas (Ar and O_2) delivery. Setting and reflection of ion source electric parameters and gas delivery parameters is performed by use of the visualisation system.

5.13. The management system performs the plant cooling system monitoring and water flow control in cooling lines.

5.14. By performing a technological cycle, according to operator's choice on the visualisation computer screen there is reflected information as follows:

- Pumping system status;
- Pressure in chambers and pumps;
- Working parameters for power sources, heaters, ion sources, organic sublimation cells and thermal evaporators;
- Gas delivery systems parameters;
- Water cooling system status.

5.15. In the visualisation computer monitor there will be reflected details as follows:

- Process;
- Pumping system;
- Water cooling system;
- Water chiller status
- Alarms and warnings.

5.16. Visualisation system ensures storage of process data and reflection of the data stored.

5.17. In the plant there are ensured blocking of the software and hardware, by ensuring safe operation of the personnel and by eliminating possible situations of averages related to falling out of executive devices or operator's faulty activities.

5.18. The management system operates in the following modes:

- Manual management mode;
- Semi-automatic management mode (automatic pumping-off in the central chamber and in each processing chamber).

5.19. In the complete set of the plant being delivered to customer there included are the management locker, all external cables, PC, management system prime codes, visualisation system license.

6. PLANT ACCEPTANCE/DELIVERY AT THE TENDERER

6.1. The plant initially is mounted at the Tenderer. The first turn delivery/acceptance is organised in accordance with Acceptance/delivery tests programme the both parties have agreed on, and is performed by Customer's co-participation when met have been all requirements of the technical specification.

6.2. Customer shall ensure samples and coating materials for testing.

6.3. Testing results are included into the acceptance statement. The said documents certify readiness of the plant for delivery to the Customer.

6.4. Simultaneously with Acceptance/delivery tests there is organised training of the personnel.

7. PLANT MOUNTING, ADJUSTMENT AND DELIVERY AT THE CUSTOMER

7.1. The Customer shall prepare premises envisaged for the plant, ensure necessary lifting devices and equipment in accordance with mounting drawings and arrangement of the premises, the parties have agreed beforehand on.

7.2. Delivery of the plant up to the room for mounting shall be organised and performed by Tenderer or a third person contracted by Tenderer.

7.3. When Customer has received the plant, the supplier representative shall perform system installation. The Customer shall provide all facilities such as compressed air, process gases at low pressure, electrical power, exhaust line, all in a distance up to 3 meter from the system final position. There shall arrive Tenderer's representatives (a team of engineers and employees) to mount and adjust the plant. Attachment, testing and control of electric devices shall take place by consulting with either Customer's authorised and qualified representative or licensed specialist to have been invited by Customer.

7.4. After completion of all mounting works and commencement of the plant operation there is effected testing in order to set conformity to the technical specification. Testing is effected in accordance with the Acceptance/delivery tests programme to have been agreed upon by the parties. Customer shall ensure samples and coating materials for testing.

7.5. Testing results are reflected in the delivery statement. The statement itself shall be a basis for the final agreement payment. The guarantee time shall begin from the day when the delivery statement having been signed.

7.6. Customer shall ensure all lifting devices necessary for mounting of the plant, for operation, maintenance and repair works, as well as necessary support of the Customer's personnel.

8. PERSONNEL TRAINING

8.1. For Customer's employees ensured there shall be theoretical and practical training for the time when there is taking place testing of the plant at Tenderer's. Such training programme and duration of the Customer's team staying at the Tenderer's shall be arranged with the Customer not later than one month prior to testing of the plant.

8.2. During the plant mounting, adjustment and putting into operation the personnel indicated by the Customer may be trained and may participate in all mounting, adjustment and commencement of operation stages.

9. DRAWINGS AND TECHNICAL DOCUMENTATION

9.1. Not later than a week after signing of the agreement Customer shall ensure Tenderer with the plant placement premises arrangement drawings (plans).

9.2. Not later than within one month time after signing of the agreement Tenderer shall ensure Customer with Planned works schedule.

9.3. Within 45 working days from the day when the advance payment has been received in the bank Tenderer shall ensure Customer with documents as follows:

- The proposal for mounting of the plant in accordance with the envisaged premises arrangement. All plant design alterations after signing of the accorded agreement having been performed upon Client's request will be at Client's account;
- Electric and management system specification;
- Mounting drawings for main plant parts;
- Schematic diagrams (vacuum, electric, hydraulic, gas, pneumatic);
- Risks protocol;
- Acceptance/delivery tests programme;
- A list of both: the parts to be procured and the suppliers;

- A list of spare parts.

9.4. Within two weeks after sending of documents Customer's and Tenderer's representatives may discuss them in Customer's office (upon Customer's request).

9.5. Simultaneously with the plant the Tenderer shall supply Customer a full activities documentation package, by including therein:

- Operator's technological card & Manual – 2 complete sets;
- Maintenance technological card & Manual – 2 complete sets;
- Electric and management schemes – 3 complete sets;
- PLC and MMI prime code – 2 complete sets;
- Suppliers' Manuals – 1 complete set;
- Certificate of origin.

9.6. Technical documentation on the plant shall be supplied in two volumes in Latvian or English. All documentation and requirements in drawings shall be in English. Drawings shall be in SolidWorks and/or ACAD formats. Ensured shall be also an electronic copy of all documents and drawings.

10. PACKING, TRANSPORTATION AND STORAGE

10.1. The plant shall be packed in containers ensuring its safety during transportation. Tenderer shall perform the plant preparation for transportation in compliance with the branch standards.

10.2. The plant shall be handed over to Transporters. Tenderer shall choose Transporters and coordinates it with Customer.

10.3. The plant shall be transported in containers suitable for the type of transportation. The number of containers shall be set after elaboration of the technical documentation.

11. GUARANTEE

11.1. Tenderer shall guarantee operation of the plant in pure premises, fulfilment of parameters in compliance with the technical specification.

11.2. Within 12 months' time from the day when there is signed the delivery statement Tenderer shall ensure the plant repair and/or replacement of details having become invalid or threatening a proper operation of the plant if these defects have occurred not through fault of the Customer.

Pielikums Nr.2 atklāta konkursa „Daudzfunkcionālas klāstera iekārtas vakuuma pārklājumu izgatavošanai piegāde" nolikumam Iepirkums Nr.: LU CFI 2013/8/ERAF	**ANNEX 2** to the Regulation of the Open Tender "Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings" Procurement No.: LU CFI 2013/8/ERDF

LĪGUMS (projekts)	**CONTRACT (draft)**
Rīgā, 2013. gada ___._____ Latvijas Universitātes aģentūras – LU Cietvielu fizikas institūta līgumu uzskaites Nr. 2013/8/ERAF	Riga, _____2013. Institute of Solid State Physics University of Latvia Contract registration No. 2013/8/ERDF
Latvijas Universitātes aģentūra – Latvijas Universitātes Cietvielu fizikas institūts (turpmāk tekstā – LU CFI), turpmāk tekstā – **Pircējs**, tā direktora Andra Šternberga personā, kas rīkojas saskaņā ar LU CFI nolikumu, no vienas puses, un_____ _____, turpmāk tekstā – **Pārdevējs**, tās _____ personā, kas rīkojas saskaņā ar tās statūtiem, no otras puses, abi kopā turpmāk tekstā – **Puses** un katrs atsevišķi turpmāk tekstā arī **Puse**, pamatojoties uz **Pārdevēja** piedāvājumu un **Pircēja** iepirkumu komisijas lēmumu par atklāta konkursa LU CFI 2013/8/ERAF „Daudzfunkcionālas klāstera iekārtas vakuuma pārklājumu izgatavošanai piegāde" rezultātiem, ERAF līdzfinansēta projekta „Nanostrukturēto un daudzfunkcionālo materiālu, konstrukciju un tehnoloģiju Valsts nozīmes pētniecības centra zinātniskās infrastruktūras attīstīšana" (projekta Nr. 2011/0041/2DP/2.1.1.3.1/ 11/IPIA/VIAA/004) izpildei noslēdz šādu līgumu, turpmāk tekstā saukts **Līgums**:	Institute of Solid State Physics University of Latvia (hereinafter – the ISSP), hereinafter – the **Purchaser**, in the person of Mr. Andris Sternbergs, its Director, acting pursuant to the Regulation of the ISSP on the one side, and _____, hereinafter – the **Seller**, in the person of _____, its _____, acting pursuant to the Articles of Association, on the other side, both hereinafter referred to as the **Parties**; each separately hereinafter referred to as the **Party,** on the basis of the **Seller**'s offer and decision by the Procurement Commission of the **Purchaser** on the results of the Open Tender "Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings" (LU CFI 2013/8/ERDF) for fulfilment of the ERDF Project No.: 2011/0041/2DP/2.1.1.3.1/11/IPIA/VIAA/004 "Development of Scientific Infrastructure for the National Research Centre of Nanostructured and Multifunctional Materials, Constructions and Technologies" shall conclude the following contract, hereinafter – the **Contract**:
1. LĪGUMA PRIEKŠMETS	1 SUBJECT OF THE CONTRACT
1.1. **Pārdevējs** pārdod, bet **Pircējs** pērk **Daudzfunkcionālu klāstera iekārtu vakuuma pārklājumu izgatavošanai**, kuras tehniskā specifikācija norādīta šā līguma pielikumā Nr.1. (turpmāk tekstā - **Prece**).	1.1 The **Seller** shall sell and the **Purchaser** shall buy the **Multifunctional Cluster Plant for Deposition of Vacuum Coatings**, the technical specification of which has been indicated in Annex 1 herein (hereinafter - the **Goods**).
1.2. **Līguma** summa, ieskaitot visus ar līguma izpildi saistītos izdevumus un nodokļus ir Ls ____ (_____), turpmāk šā līguma tekstā saukta **Līgumcena**.	1.2 The **Contract** price is _____ (_____), including all the expenses, taxes and duties related to the performance with the **Contract**.

2. PIEGĀDES IZPILDES - PIEŅEMŠANAS NOSACĪJUMI UN APMAKSAS KĀRTĪBA	**2 CONDITIONS OF THE PERFORMANCE AND APPROVAL OF THE DELIVERY AND THE PROCEDURE OF PAYMENT**
2.1. **Prece Pircējam** tiek piegādāta Ķengaraga ielā 8, Rīgā, Latvijā, LU Cietvielu fizikas institūta telpās.	2.1 The **Goods** shall be delivered to the **Purchaser** at the address: Kengaraga street 8, Riga, Latvia, the premises of the ISSP.
2.2. Saskaņā ar **Līgumu**: 2.2.1. piegādājamās **Preces** nodošanas **Pircējam** pirmā kārta notiek **Pārdevēja** (**Ražotāja**) telpās ne vēlāk kā 17 (septiņpadsmit) mēnešu laikā skaitot no **Līguma** noslēgšanas. Nodošanas pirmā kārta notiek atbilstoši Tehniskās specifikācijas 6.nodaļai. 2.2.2. piegādājamā **Prece** tiek nodota **Pircējam** (akceptēta, abpusēji parakstot pieņemšanas – nodošanas aktu) **Pircēja** telpās ne vēlāk kā 18 (astoņpadsmit) mēnešu laikā skaitot no **Līguma** noslēgšanas. Nodošana notiek atbilstoši Tehniskās specifikācijas 7.nodaļai. 2.2.3. **Līguma** punktos 2.2.1. un 2.2.2. minētos termiņus ir iespējams pagarināt par laiku līdz 6 (sešiem) mēnešiem.	2.2 Pursuant to the **Contract**: 2.2.1 The first acceptance of the **Goods** by the **Purchaser** shall take place at the premises of the **Seller** (**Producer**) no later than within 17 (seventeen) months time as of the day of entering into the **Contract.** The first acceptance of the **Goods** shall take place in accordance with the Chapter 6 of the Technical Specifications. 2.2.2 the **Goods** to be delivered shall be delivered to the **Purchaser** (accepted by the mutual signing of the Deed of Transfer) no later than within 18 (eighteen) months time as of the day of entering into the **Contract**. The acceptance of the **Goods** shall take place in accordance with the Chapter 7 of the Technical Specifications. 2.2.3 The terms indicated in Items 2.2.1 and 2.2.2. of the Contract can be extended, but not more than for 6 (six) months.
2.3. **Pircējs** veic avansa maksājumu Ls_____ (_____) jeb 50% apmērā no **Līgumcenas** 30 (trīsdesmit) dienu laikā pēc **Līguma** abpusējas parakstīšanas un bankas avansa garantijas un avansa rēķina saņemšanas. Atlikušo **Līguma** summas daļu **Pircējs** apņemas apmaksāt 2 (divos) maksājumos: Ls_____ (_____) jeb 30% no līgumcenas **Pircējs** apmaksā 30 (trīsdesmit) dienu laikā pēc **Preces** pieņemšanas **Pārdevēja** (**Ražotāja***)* telpās un pēc rēķina saņemšanas un Ls_____ (_____) jeb 20% no līgumcenas **Pircējs** apmaksā 30 (trīsdesmit) dienu laikā skaitot no abpusēji parakstīta pieņemšanas – nodošanas akta parakstīšanas un rēķina saņemšanas dienas.	2.3 The **Purchaser** shall make a prepayment in the amount of LVL_____ (_____) or 50% of the **Contract** price within 30 (thirty) days from mutual signing of the **Contract** and receiving of the advance payment bank warranty and advance payment invoice. The **Purchaser** hereby undertakes to make the payment of the remaining part of the **Contract** price in 2 (two) payments: LVL _____ (_____) or 30% of the **Contract** price shall be paid by the **Purchaser** within 30 (thirty) days from the day of the acceptance of the **Goods** at the premises of the **Seller** (**Producer**) and receipt of the invoice and LVL _____ (_____) or 20% of the **Contract** price shall be paid by the **Purchaser** within 30 (thirty) days from the day of the mutual signing of the Deed of Transfer and receipt of the invoice.

3. LĪGUMSLĒDZĒJU PUŠU ATBILDĪBA	3 LIABILITY OF THE CONTRACTING PARTIES
3.1. Līdz piegādātās **Preces** pilnas apmaksas izdarīšanai, piegādātā **Prece** ir **Pārdevēja** īpašums. **Preces** nejaušas bojāejas (bojājuma) risku sākot ar brīdi, kad **Prece** ir nogādāta **Pircēja** telpās, uzņemas **Pircējs**. Īpašumtiesības uz piegādāto **Preci** pāriet **Pircējam** ar brīdi, kad **Pircēja** banka ir akceptējusi maksājuma uzdevumu par piegādājamās **Preces** pilnu apmaksu.	3.1 The delivered **Goods** shall be the property of the **Seller** until making full payment for the delivered **Goods**. The risk for an unintentional destruction (damage) of the **Goods** shall be assumed by the **Purchaser** from the moment of delivery of the **Goods** to the premises of the **Purchaser**. The ownership rights to the **Goods** shall be transferred to **Purchaser** from the moment the **Purchaser's** bank has approved the payment order on the full payment for the delivered **Goods**.
3.2. Par apmaksas termiņa neievērošanu **Pircējs**, pēc **Pārdevēja** pirmā pieprasījuma, maksā **Pārdevējam** līgumsodu 0,1% (procenta vienas desmitdaļas) apmērā no nokavētā maksājuma summas par katru nokavēto dienu, bet ne vairāk kā 10% (desmit procentus) no nokavētā maksājuma summas. Nokavējuma procentu samaksa neatbrīvo no **Līguma** saistību izpildes.	3.2 For the failure to comply with the payment term the **Purchaser**, upon the first request by the **Seller**, shall pay the contractual penalty to the **Seller** in the amount of 0.1% (one-tenths of one percent) from the sum of the delayed payment for each delayed day, but no more than 10% (ten percent) of the delayed payment. The payment of the contractual penalty shall not free from the compliance with the **Contract** commitments.
3.3. Par **Preces** piegādes kavējumu **Pārdevējs**, pēc **Pircēja** pirmā pieprasījuma, maksā **Pircējam** līgumsodu 0,1% (procenta vienas desmitdaļas) apmērā no līgumsummas par katru nokavēto dienu, bet ne vairāk kā 10% (desmit procentus) no **Līguma** summas. Līgumsoda samaksa neatbrīvo no **Līguma** saistību izpildes.	3.3 For the delay of the delivery of the **Goods** the **Seller**, upon the first request by the **Purchaser**, shall pay the contractual penalty to the Purchaser in the amount of 0.1% (one-tenths of one percent) from the **Contract** price for each delayed day, but no more than 10% of the **Contract** price. The payment of the contractual penalty shall not free from the compliance with the **Contract** obligations.
3.4. Katra līgumslēdzēja **Puse** atbild par **Līguma** neizpildi vai nepienācīgu izpildi, ja tās vainas dēļ nodarīts kaitējums otrai līgumslēdzēja **Pusei**.	3.4 Every **Contracting Party** shall be liable for the failure to comply with the **Contract** or for inadequate compliance, if the detriment is thus caused to the other **Contracting Party**.
3.5. **Puses** ir tiesīgas rīkoties caur saviem pārstāvjiem.	3.5 The **Parties** shall be entitled to act through their representatives.

3.6. **Pārdevējs** atbild par **Pircējam** piegādātās **Preces** kvalitāti, kādu noteicis attiecīgo preču ražotājs saskaņā ar **Pārdevēja** izsniegto garantijas sertifikātu. **Preces** garantijas remonts ir jāveic atbilstoši vispārpieņemtajai praksei šādām **Precēm**. **Preces** bojājumus **Pircējs** piesaka rakstiski pa faksu _____ vai ziņojot uz e-pasta adresi _____. Paraleli informācijas nodošanai var izmantot tālr._____ . **Pārdevējs** rakstiski pa faksu _____ vai e-pastu _____ apstiprina pieteikuma par **Preces** bojājumu saņemšanu.	3.6 The **Seller** shall be liable to the **Purchaser** for the quality of the delivered **Goods**, stated by the manufacturer of the respective **Goods** subject to the warranty certificate issued by the **Seller**. The warranty repair of the **Goods** shall be made subject to the common practice for the respective **Goods**. The **Purchaser** shall notify of the damaged **Goods** in writing by fax _____ or by sending an e-mail message to the address: _____. Information may at the same time be provided by telephone _____. The **Seller** shall confirm the receipt of the the notification of the damaged **Goods** in writing by fax or e-mail.
3.7. **Pārdevēja** reakcijas laiks (laiks no **Preces** bojājuma pieteikšanas līdz **Pārdevēja** speciālista ierašanās pie **Pircēja** brīdim) ir ne vairāk kā 5 (piecas) darba dienas. Pretējā gadījumā **Pārdevējs**, pēc **Pircēja** pirmā pieprasījuma, maksā **Pircējam** sodu par līguma saistību nepildīšanu Ls 200 (divi simti latu) par katru reakcijas kavējuma darba dienu.	3.7 The **Seller's** reaction (the time from the notification of the damaged **Goods** until the arrival of the **Seller's** expert at the Purchaser's location) shall not exceed 5 (five) business days. Failing to do so, the **Seller** shall pay the **Purchaser**, upon the **Purchaser's** first request, the penalty for the failure to comply with the **Contract** obligations in the amount of LVL 200 (two hudred lats) for each business day of the above delayed reaction.
3.8. **Pārdevējam** ir pienākums uzsākt remontu nekavējoties un novērst pieteiktos defektus abpusēji saskaņotā laikā, bet ne ilgāk kā 3 (trīs) mēnešu laikā. Ja bojājums nav novērsts saskaņotajā termiņā, tad par katru kavēto dienu **Pircējs** var pieprasīt **Pārdevējam** maksāt sodu 200 Ls (divi simti latu) apmērā par katru kavējuma dienu. Par aprēķinātu sodu piestāda rēķinu reizi mēnesī.	3.8 The **Seller** shall have an obligation begin the repair work as soon as possible and to perform the repair work of the notified defects at mutually agreed time but no later than in 3 (three) months time. If such defect has not been repaired at the mutually agreed time, the **Seller** shall pay the **Purchaser**, upon the **Purchaser's** first request, the penalty in the amount of LVL 200 (two hudred lats) for each delayed day. The invoice for the calculated penalty shall be issued once a month.
3.9. Ja bojājumu neizdodas novērst 6 (sešu) mēnešu laikā un šajā laikā iekārtu nevar izmantot, tad nākamā 1 (viena) mēneša laikā **Pārdevējs** atgriež **Pircējam** summu iekārtas iegādes vērtībā.	3.9 If it is not possible to perform the repair work in 6 (six) months time and the equipment can't be used in this time, the **Seller** shall return the **Purchaser** the sum equal to the equipment purchase amount in 1 (one) month time.
3.10. Garantijas apkalpošanas perioda laikā notikuša bojājuma gadījumā **Pārdevējs** uz sava rēķina, nepazeminot **Preces** kvalitāti, veic bojātās daļas nomaiņu vai remontu. Garantijas saistības ir spēkā pie nosacījuma, ka nav iestājušies garantijas sertifikātā norādītie apstākļi, kas pārtrauc garantijas saistības.	3.10 In the event of a damage occurring during the warranty maintenance period, the **Seller** shall replace the faulty part or make the repair at his/her expense, without diminishing the quality of the **Goods**. The warranty commitments are valid on the condition that the circumstances stated in the warranty certificate and terminating the warranty commitments, have not set in.
3.11. **Precei** tiek noteikts garantijas laiks: 12 (divpadsmit) mēneši no **Preces** piegādes brīža.	3.11 The following warranty period shall be stipulated for the **Goods**: 12 (twelve) months from the performance of the delivery.

3.12. Visos dokumentos, kas saistīti ar šo **Līgumu Pārdevējs obligāti** norāda visus nepieciešamos rekvizītus un datus, tajā skaitā ERAF projekta nosaukumu un numuru (Projekts Nr.: 2011/0041/2DP/2.1.1.3.1/11/ IPIA/VIAA/004 „Nanostrukturēto un daudzfunkcionālo materiālu, konstrukciju un tehnoloģiju Valsts nozīmes pētniecības centra zinātniskās infrastruktūras attīstīšana") un iepirkuma identifikācijas numuru (LU CFI 2013/8/ERAF).	3.12 The **Seller on a mandatory basis** shall indicate all the necessary banking data and information including the name and the number of ERDF project (Project No.: 2011/0041/2DP/ 2.1.1.3.1/11/IPIA/VIAA/004 "Development of Scientific Infrastructure for the National Research Centre of Nanostructured and Multifunctional Materials, Constructions and Technologies) and the procurement identification number (LUCFI 2013/8/ERDF) in all the documents regarding the present **Contract**.
3.13. **Līguma** 3.12.p. prasību neievērošanas gadījumā, **Pircējs** patur tiesības neapmaksāt rēķinus līdz minēto prasību izpildei.	3.13 In the event of non-compliance with the requirements of Item 3.12 of the **Contract**, the **Purchaser** shall reserve the rights to make no payment of the invoices until the compliance with the stated requirements.
4. NEPĀRVARAMA VARA	4 FORCE MAJEURE
4.1. Gadījumā, kad rodas nepārvaramas varas apstākļi, tādi kā dabas katastrofas, karš, jebkuras militāras akcijas, valsts pārvaldes institūciju rīkojumi, lēmumi vai aizliegumi un citi ārkārtēji apstākļi, kurus **Puses** nevarēja paredzēt un novērst ar saviem līdzekļiem, līgumsaistību izpildes laiks pagarinās par periodu, kurā pastāv nepārvaramas varas radītie apstākļi. Ja nepārvaramas varas apstākļi pastāv ilgāk kā 3 (trīs) mēnešus, **Līguma** darbība tiek izbeigta un **Puses** veic savstarpējo norēķinu atbilstoši faktiski piegādātajai **Precei**.	4.1 In the cases of the force majeure circumstances, such as the natural hazards, war, any military actions, orders by the state administration institutions, decisions or prohibitions and other extraordinary circumstances, which the **Parties** could not envisage and prevent with their own resources, the time period of compliance with the **Contract** obligations shall be extended by the period of the existence of the circumstances caused by the force majeure. If the force majeure circumstances exist for more than 3 (three) months, the **Contract** shall be terminated and the **Parties** shall make mutual settlement subject to the actually delivered **Goods**.
5. CITI NOTEIKUMI	5 OTHER CONDITIONS
5.1. **Līgums** stājas spēkā ar tā parakstīšanas brīdi un darbojas līdz pilnīgai abpusējai **Līguma** saistību izpildei. **Līgums** atspoguļo **Pušu** vienošanos attiecībā uz **Līguma** priekšmetu, apmaksas, piegādes u.c. nosacījumiem un atceļ visas iepriekšējās sarakstes un mutiskas vienošanās, kas pastāvējušas starp **Pusēm** līdz **Līguma** parakstīšanai.	5.1 The **Contract** shall take effect from the moment of signing and shall be valid until full mutual compliance with the **Contract** obligations. The **Contract** shall reveal the agreement of the **Parties** with respect to the subject of the **Contract**, conditions of the payment, delivery and other provisions, and shall revoke all the preceding written communication and oral arrangements existing among the **Parties** until the signing of the **Contract**.

5.2**. Pārdevējs**, slēdzot **Līgumu**, iesniedz **Pircējam** bankas izsniegtu avansa maksājuma garantiju 50% apmērā no **Līgumcenas** (ietverot PVN, ja piemērojams) ar derīguma termiņu līdz laikam, kad **Pircējs** apliecina **Preces** saņemšanu **Pircēja** telpās, bet ne īsāku kā 20 (divdesmit) mēneši no līguma noslēgšanas brīža. 2.2.3. punktā minētā līguma pagarināšana stājas spēkā tikai tad, ja ir iesniegts bankas garantijas pagarinājums, nosakot tās derīguma gala termiņu ne īsāku, kā iekārtas pieņemšanas datums (saskaņā ar pagarināto 2,2.2. punkta termiņu) plus 2 (divi) mēneši. **Pircējs** atgriež avansa maksājuma garantiju **Pārdevējam** 2 (divu) nedēļu laikā pēc **Preces** saņemšanas **Pircēja** telpās.	5.2 The **Seller**, entering into the **Contract**, shall submit to the **Purchaser** the Advance Payment Guarantee issued by the bank in the amount of 50% of the **Contract** value (including VAT, if applicable) valid until the **Purchaser** confirms receipt of the **Goods** at the premises of the **Purchaser**. Validity term of the Advance Payment Guarantee shall be not less than 20 (twenty) months from the date of entering into the **Contract.** The prolongation of the Contract indicated in Item 2.2.3 of the **Contract** shall take effect if the prolongation of the Advance Payment Guarantee granted by the bank is submitted. The validity term of the prolonged Advance Payment Guarantee shall be up to the date of the acceptance of the **Goods** (in accordance with the prolonged term of Item 2.2.2 of the **Contract**) plus 2 (two) months**.** The **Purchaser** shall return the Advance Payment Guarantee to the **Seller** in 2 (two) weeks after receipt of the **Goods** at the premises of the **Purchaser** and receipt of the invoice.
5.3. **Pasūtītājs** vienpusēji ir tiesīgs lauzt **Līgumu**, ja **Līguma** termiņš nav likumīgi pagarināts un **Preču** piegāde kavējas vairāk par 1 (vienu) mēnesi pēc šī **Līguma** termiņa beigām.	5.3 The **Purchaser** shall be entitled to terminate the **Contract** unilaterally, if the **Contract** deadline is not legally extende and delivery of the **Goods** has been delayed by more than 1 (one) month following the expiry of the deadline of the present **Contract**.
5.4. Ja **Pircējs nav** saņēmis **Preci Pircēja** telpās un līgums tiek lauzts, bet **Pārdevējs** neatmaksā avansu 2 (divu) nedēļu laikā pēc **Līguma** laušanas, **Pircējs** pieprasa garantijas izdevējam nekavējoties atmaksāt samaksāto avansu.	5.4. If the **Goods** are not received at the premises of the **Purchaser** and the **Contract** is terminated, but the **Seller** has failed to repay the advance payment in 2 (two) weeks time after the **Contract** has been terminated, the **Purchaser** shall request that the issuer of the above Guarantee repay the advance payment immediately.

5.5. Visi būtiskie paziņojumi, kas attiecas uz šā **Līguma** noteikumu izpildi, sūtāmi ierakstītā vēstulē uz šā **Līguma** 6.punktā norādītām adresēm, vai nododami **Pusēm** personīgi. Ja paziņojumi tiek sūtīti ierakstītā vēstulē, tie uzskatāmi par saņemtiem trešajā dienā pēc to nosūtīšanas Latvijas adresātiem vai 14. dienā pēc to nosūtīšanas ārvalstu adresātiem. Adreses maiņa kļūst saistoša otrai **Pusei**, tad, kad **Puse**, kuras adrese tiek mainīta nosūta tai paziņojumu vai dokumentu, kas apstiprina šādas izmaiņas. Lai paātrinātu informācijas apriti, visi dokumenti adresātam vispirms jānosūta pa faksu vai uz oficiālo norādīto e-pasta adresi un saņēmējam jāatsūta apstiprinājums par saņemšanu.	5.5 All notifications related to the compliance with the conditions of the present **Contract** shall be sent in a registered letter to the addresses stated in Item 6 herein or delivered to the **Parties** in person. If the notifications are sent in a registered letter, they shall be deemed to be received on the third day after mailing, if the addressee is in Latvia, or on the fourteenth day after mailing, if the addressee is outside Latvia. The change of address shall be binding on the other **Party**, when the **Party** whose address is changed sends the other Party a notification or a document certifying such changes. To accelerate the information exchange, at first, all documents shall be sent to the addressee by fax or to the official e-mail address specified, and the recipient shall send a confirmation of such receipt.
5.6. Visi strīdi un domstarpības, kādas **Pusēm** radušās šā **Līguma** izpildes gaitā, un nav atrisināmas pārrunu ceļā 30 dienu laikā, tiek izskatītas Latvijas Republikas tiesu iestādēs, Latvijas Republikas normatīvajos aktos paredzētajā kārtībā.	5.6 All disputes and disagreements arising between the **Parties** in the course of compliance with the present **Contract** and cannot be resolved by way of negotiations in 30 days, shall be settled in the court institutions of the Republic of Latvia in the procedure stipulated by the regulatory enactments of the Republic of Latvia.
5.7. **Puses** ar savu parakstu apliecina, ka tām ir visas tiesības (pilnvaras) slēgt **Līgumu** un ar to iegūstot savu pārstāvamo vārdā **Līgumā** minētās tiesības un pienākumus. Ja **Pārdevēja** pārstāvis līguma noslēgšanas brīdī nav bijis pilnvarots pārstāvēt **Pārdevēju**, tad viņš/viņa pats/pati, kā fiziska persona atbild par līgumsaistību izpildi ar visu savu mantu.	5.7 The **Parties** shall certify with their signatures that they have all the rights (authorisations) to enter into the **Contract**, thereby acquiring, in the name of the persons represented by them, the rights and obligations stated in the **Contract**. If the **Seller's** representative has not been authorised to represent the **Seller** at the moment of entering into the **Contract**, then he/she as a natural person shall be held liable for the compliance with the **Contract** obligations with all his/her property.
5.8. **Puses** pilnvaro veikt ar šā **Līguma** izpildi saistītās darbības (kontaktēties ar otru **Pusi**, parakstīt **Preces** pavadzīmes-rēķinus, nodot/saņemt **Preci**) šādas personas:	5.8 The **Parties** shall hereby authorise the following persons to perform the activities related to the compliance with the present **Contract** (to contact with the other **Party**, to sign the invoices of the **Goods,** to transfer, to accept the **Goods**):
5.8.1. no **Pircēja** puses: _____ _____;	5.8.1 on the **Purchaser's** side _____ _____;
5.8.2. no **Pārdevēja** puses _____ _____.	5.8.2 on the **Seller's** side _____ _____ .

5.9. Šis **Līgums** ir uzrakstīts divos autentiskos eksemplāros latviešu un angļu valodā uz ___ (_____) lapām. **Līguma** 1. pielikums un citi **Līguma** iespējamie pielikumi ir tā neatņemamas sastāvdaļas. Pēc **Līguma** parakstīšanas viens eksemplārs tiek nodots **Pircējam**, bet otrs – **Pārdevējam**.	5.9 The present **Contract** shall be drawn up on ___ (_____) pages in Latvian and English in two authentic copies. Annex 1 to the **Contract** and other potential Annexes to the **Contract** are an integral part of the **Contract**. After signing of the **Contract**, one copy shall be delivered to the **Purchaser**, but the other – to the **Seller**.
6. LĪGUMSLĒDZĒJU PUŠU JURIDISKĀS ADRESES UN CITI REKVIZĪTI	6 THE LEGAL ADDRESSES AND OTHER DATA OF THE CONTRACTING PARTIES
Pircējs:	**Purchaser:**
Latvijas Universitātes aģentūra – Latvijas Universitātes Cietvielu fizikas institūts Juridiskā adrese: Ķengaraga iela 8, Rīga, LV-1063, Latvija PVN reģ.Nr. LV90002124925 Norēķinu konts: LV45TREL9154361000000, Banka: Valsts Kase, Bankas kods: TRELLV22	Institute of Solid State Physics University of Latvia Legal address: Kengaraga street 8, Riga, LV-1063, Latvia VAT reg. No. LV90002124925 Account number: LV45TREL9154361000000 Bank: Riga Treasury Unit Code: TRELLV22
Pārdevējs:	**Seller:**
Nosaukums:_____ Juridiskā adrese: _____ Biroja adrese: _____ PVN reģ.Nr. _____ Norēķinu konts: _____ Banka: _____ Bankas kods: _____	Name:_____ Legal address: _____ Address of the office: _____ VAT reg. No. _____ Account number: _____ Bank: _____ Code: _____
Pircējs / Purchaser:	**Pārdevējs / Seller:**
_____ Paraksts / Signature Z.v./ Seal	_____ Paraksts / Signature Z.v./ Seal

Līguma pielikums Nr.1
līgumam par iepirkumu Nr. LU CFI 2013/8/ERAF
„Daudzfunkcionālas klāstera iekārtas vakuuma pārklājumu izgatavošanai piegāde",
noslēgtam starp LU Cietvielu fizikas institūtu, LU aģentūru
un _____

Annex 1 to the Contract
on the Procurement No. LU CFI 2013/8/ERDF "Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings" concluded between the Institute of Solid State Physics University of Latvia
and _____

Rīgā, 201__. gada ___._____ LU Cietvielu fizikas institūta līgumu uzskaites Nr. 2013/8/ERAF	Riga, _____201__. Institute of Solid State Physics University of Latvia Contract registration No. 2013/8/ERDF
Latvijas Universitātes Cietvielu fizikas institūts, Latvijas Universitātes aģentūra (turpmāk tekstā – LU CFI), turpmāk tekstā – **Pircējs**, tā direktora Andra Šternberga personā, kas rīkojas saskaņā ar LU CFI nolikumu, no vienas puses, un_____ _____, turpmāk tekstā – **Pārdevējs**, tās _____ personā, kas rīkojas saskaņā ar tās statūtiem, no otras puses, vienojas par šādu piegādājamo **Preci**, tās līgumcenu un garantijas laika termiņu:	Institute of Solid State Physics University of Latvia (hereinafter – the ISSP), hereinafter – the **Purchaser**, in the person of Mr. Andris Sternbergs, its Director, acting pursuant to the Regulation of the ISSP on the one side, and _____, hereinafter – the **Seller**, in the person of _____, its _____, acting pursuant to the Articles of Association, on the other side, agree on the following items constituting the **Goods** to be supplied, price and the deadlines of the warranty period:

Piegādājamā Prece (iekārtas nosaukums, ražotājs, modelis) / Goods to be supplied (equipment name, manufacturer, model)	Cena piegādes vietā / Price at the place of delivery	Garantijas laiks / Warranty period	Piegādes vieta / Place of delivery
		12 (divpadsmit) mēneši 12 (twelve) months	LU Cietvielu fizikas institūts, Ķengaraga iela 8, Rīga, Latvija / Institute of Solid State Physics University of Latvia, Kengaraga street 8, Riga, Latvia

Turpinājums nākamajā lappusē / Continued on next page

Līguma pielikums Nr.1 / Annex 1. to the Contract

TEHNISKĀS SPECIFIKĀCIJAS / TECHNICAL SPECIFICATIONS

Daudzfunkcionāla klāstera iekārta vakuuma pārklājumu izgatavošanai

Multifunctional Cluster Plant for Deposition of Vacuum Coatings

Šeit tiks ievietota Pārdevēja tehniskā piedāvājuma tabula (sastādīta, izmantojot šī nolikuma 4.pielikumā doto veidlapu)

The table of the Seller's Technical bid (drawn up on the form given in Annex 4 to the Regulation) will be inserted here.

Pircējs / Purchaser:	**Pārdevējs / Seller:**
_____ Paraksts / Signature Z.v./ Seal	_____ Paraksts / Signature Z.v./ Seal

SHALL BE FILLED IN BY THE TENDERER

ANNEX 3.1
to the Regulation of the Open Tender LU CFI 2013/8/ERDF
"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

APPLICATON FOR PARTICIPATION IN OPEN TENDER

Contracting Authority: Institute of Solid State Physics University of Latvia
Procurement ID No: LUCFI/2013/8/ERDF _____
/Date/

Subject of the procurement:
Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings, 1 set.
(ERDF Project ID No: 2011/0041/2DP/2.1.1.3.1/11/IPIA/VIAA/004)

Having acquainted ourselves with the Tender Regulation, we, the undersigned, offer to provide the Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings pursuant to the requirements stipulated by the Tender Regulation and agreeing with all provisions of the Tender, in the amount as stated below:

_____
(total Offer price in letters and figures)

Should our Offer be accepted, we undertake to provide the delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings within 18 (eighteen) months from entering into the Contract in line with the Technical Bid which is an integral part of our Offer.

We hereby acknowledge that the Offer validity term shall be 3 (three) months.
We herby submit our Offer incorporating the Tenderer selection documents, Technical Bid and Financial Bid.

Name of the Tenderer:	
Registered address	
Actual address	
Registration number	
VAT payer's number	
Telephone	
Fax	
e-mail address	
Internet address	
Contact person	
Telephone and e-mail address of the Contact person	
Name, surname and position of the authorised representative	
Signature of the authorised representative	

SHALL BE FILLED IN BY THE TENDERER

ANNEX 3.2
to the Regulation of the Open Tender LU CFI 2013/8/ERDF
"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

A list of the delivery of similar* goods during the previous 3 (three) years and current year (Give reference to 3 – 5 main Contracts)

(A list shall be annexed at least with 2 positive customer references on the main contracts mentioted in list)

No.	Brief description of the Contracts	Amount of the executed Contract	Name and address or country** of the Client	Delivery date

* In this Regulation the vacuum-technological equipment and equal goods ar regarded as similar to the subject of the procurement

** Where the Tenderer has specified the client's country only, the Tenderer ensures the procurement commission a possibility to review the Contract documents.

The signature of the Tenderer's authorised person:

_____ _____ _____
/Name, surname/ /Position/ /Signature/

_____ , _____ 2013
(place) (date)

SHALL BE FILLED IN BY THE TENDERER

ANNEX 3.3
to the Regulation of the Open Tender LU CFI 2013/8/ERDF
"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

A list of the Tenderer's personnel to be employed in the installation and/or warranty repair work of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings in accordance with the terms and conditions of the Contract

(The list shall be annexed with copies of documents certifying the qualifications or information on the experience of the above personnel in performing a similar work, certified by the Tenderer)

Name, Surname	Position	Speciality, qualification, experience

The signature of the Tenderer's authorised person:

_____ _____ _____
/Name, surname/ /Position/ /Signature/

_____ , _____ 2013
(place) (date)

ANNEX 4
to the Regulation of the Open Tender LU CFI 2013/8/ERDF
"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

SHALL BE FILLED IN BY THE TENDERER

TECHNICAL BID

For the Procurement LUCFI 2013/8/ERDF
"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

(Procurement will be performed within the ERDF Project
No.: 2011/0041/2DP/2.1.1.3.1/11/IPIA/VIAA/004 "Development of Scientific Infrastructure for the National Research Centre of Nanostructured and Multifunctional Materials, Constructions and Technologies")

Multifunctional Cluster Plant for Deposition of Vacuum Coatings

Technical bid shall be filled in as follows:

The Tenderer upon filling in the Sections 0 – 2 and 4 – 12 of the Technical Bid, in Items, where the Technical Bid complies with the requirements and where it is not requested that the Tenderer indicates its specification, may fill in "Is compliant" in the relevant Items instead of repeating the text specified in the Technical Specifications. Record shall be provided for each numbered Item or Sub-item. Upon filling in Section 3 (Technical Data) of the Technical Bid the Tenderer shall indicate the offered technical specification.

The Tenderer, upon filling in the Technical Bid, may supplement or specify the technical specifications, describe its solutions where the above do not contradict the Contracting Authority's requirements.

In Items where the Tenderer is requested to indicate its specifications, the Tenderer shall provide a detailed description of the offered equipment herein or shall give the reference (indicating the document and the corresponding place therein) to the signed documents, which contain such detailed description.

Contracting Authority's requirements	Tenderer's technical offer
0. GENERAL REQUIREMENTS **0.1. Undefined requirements** Where any technical requirement referring to the present Contract is not defined in the Technical Specifications, it shall comply with the minimum generally accepted requirements or standards. **0.2 Technical condition of equipment to be delivered** The equipment to be delivered shall not be previously used, the used or the renovated parts shall not be built therein.	

1. TYPE and POSSIBILITIES OF THE APPLICATION **1.1. Type of the application** The cluster plant for making of vacuum coatings (hereinafter - the plant) is an R&D plant for laying (deposition) of various multifunctional coatings by use of 3 methods: substance evaporation, magnetron sputtering and sublimation. The sample is an up to 50x50 mm large, solid, flat material suitable for deposition of the coating in vacuum. The plant is envisaged for scientific research works. **1.2. Possibilities** 1.2.1. The plant is a supplemental, modular and flexible system. In its base there is a central chamber to which it is possible to attach even up to 8 processing chambers of which one is foreseen for fulfilment of input/output functions. 1.2.2. Each processing chamber is equipped with a central chamber shutter and may be operated independently of the others. 1.2.3. Input of the sample may be performed through the input/output and further through the central chamber without access of air to the concrete processing chamber or either by using any processing chamber door by prior to it admitting air into the processing chamber. Input/output of the sample takes place without stopping vacuum pumps. 1.2.4. The plant is of a simple design, conveniently serviceable, with a flexible and adaptable construction. 1.2.5. Central chamber and processing chambers are equipped with windows. 1.2.6. Coating deposition processing chambers are elaborated according to a unified design and the process equipment (evaporators, sublimation cells and magnetrons) are located on equal shutting covers in order in case of necessity one and the same equipment could be used in another processing chamber or either to perform a quick replacement of the processing equipment. 1.2.7. Coating deposition processing chambers are equipped with 2 additional flanges to be used for mounting of additional equipment and measuring instruments.	

1.2.8. Design of the chamber is elaborated so let the plant would be conveniently serviceable, visually clear, and easily manageable. 1.2.9. The plant is envisaged both for operation in ordinary interior space and in a cleanroom. 1.2.10. In order to ensure a more convenient, quicker and safer servicing of chambers, chambers are equipped with easily removable protection screens of interior surfaces.	
2. COMPLETENESS **2.1. Central chamber – transfer of the sample** In Tenderer's technical specification indicated there are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of air for ventilation, viewing windows. **2.2. 1st processing chamber – input/output of the sample and ion treatment** In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, ion treatment, delivery of gases, delivery of air for ventilation, viewing windows. **2.3. 2nd processing chamber – thermal evaporation of organic compounds** In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of gases, making of coatings and control of the making process, delivery of air for ventilation, viewing windows. **2.4. 3rd processing chamber – metal evaporation** In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of gases, deposition of coatings and control of the deposition process, delivery of air for ventilation, viewing windows. **2.5. 4th processing chamber – magnetron sputtering** In Tenderer's technical specification indicated are all chamber components, incl.	

components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of gases, deposition of coatings and control of the deposition process, delivery of air for ventilation, viewing windows. **2.6. 5th processing chamber – magnetron sputtering (for obtaining of silicon PIN structures)** In Tenderer's technical specification indicated are all chamber components, incl. components ensuring transfer and placement of samples, obtaining and measurement of vacuum, delivery of gases, deposition of coatings and control of the deposition process, delivery of air for ventilation, viewing windows. **2.7. Electric and management systems lockers** **2.8. Distilled water cooling system, including a chiller** 2.8.1. For magnetron cooling 2.8.2. For cooling of turbo molecular pumps 2.8.3. For cooling of quartz resonators for the measuring of the speed of deposition **2.9. Plant management/control working station** **2.10. Complete set of spare parts** The customer shall ensure: • Space (premises) suitable for installation • Engineering communications • Exhaust gases after treatment • Evaporation and sputtering materials • Gas/gases mixtures	
3. TECHNICAL DATA **3.1. Substrate** 3.1.1. **Substrate properties and dimensions** Material — Glass, metal or another solid, flat, suitable for vacuum processes base	

Dimensions, mm	25x25 and 50 x 50	
Thickness, mm	Up to 2	
The uncoated zone (if needed) mm	Is to be indicated in Tenderer's specification	
3.1.2. Substrate carrier (Sample holder)		
Material	Is to be indicated in Tenderer's specification	
Dimensions, mm	Is to be indicated in Tenderer's specification	
3.2. Central chamber – transfer of the sample		
Base pressure, Torr	Not higher than 1x 10^{-6}	
Transportation system	Is to be indicated in Tenderer's specification	
Storage of samples	Cassette for storage of 5 up to 10 samples	
3.3. 1st processing chamber – input/output of the sample, ion treatment		
3.3.1. Substrate surface treatment		
Treatment type	Ion flow	
Ion sources quantity, pcs	1	
Distance between the source and the sample, mm	100…150	
Ion beam energy, eV	Up to 230	
Ion beam power, W	Up to 1500	
Ion beam maximum spreading angle, degrees	Below 80	
Base pressure, Torr	Not higher than 1x 10^{-6}	

Working pressure, Torr	$1x10^{-4}$	
Process gases	Ar, O_2	
Gas flow, sccm	Ar - max 30 O_2 - max 30	
Mass flow controllers, pcs	2	
The number of sample places, pc	1	

3.4. 2nd processing chamber – thermal evaporation of organic compounds

3.4.1. Coating

Material	Organic compounds suitable for evaporation	
Coating homogeneity, %	± 5	

3.4.2. Evaporation

Evaporation element type	Crucible type evaporator with shutter	
The number of evaporation elements with shutters, pcs	3	
Crucible inner capacity, cm^3	not more than1.2	
The number of evaporators feeding sources, pcs	3 or 1 switchable	
Form of the to-be-evaporated material	Powder, granules and other	
Base pressure, Torr	Not higher than $1x\ 10^{-6}$	
Working pressure, Torr	$5x\ 10^{-6}$ to $1x10^{-4}$	
Evaporation temperature, ^oC	Up to 600	
Process gases	N_2	
Gas flow, sccm	Up to 20	
Mass flow controllers, pc	1	
Distance from the evaporator up	100-250	

to the sample, mm		
The number of substrate places, pcs	3 with place of masks	
Additional shutters	3 additional shutters, one in front of each substrate.	
Distance between substrate and mask	Direct contact	
Crucibles for evaporation of organic compounds, pcs	10	
3.4.3. **Sample heating/cooling**		
Sample temperature, ^{o}C	Maximum +60, minimum - 40	
Heater/cooler type	Indicated in Tenderer's specification	
Quantity of thermocouples for measuring of heater/cooler and substrate temperature, pcs	2	
3.4.4. **Measuring instruments**		
Quartz crystal resonance deposition speed and thickness measuring instruments, pcs	3	
Quartz crystals for resonator, pcs	15	
Resolution of deposition speed, Å/s	≤ 0.1	
	Provide start of deposition at the certain coating rate	
3.5. 3rd processing chamber – metal evaporation		
3.5.1. **Coating**		

To-be-evaporated material	Au, Ag, Al, Pd, Cu, Ni u.c.	
Coating homogeneity, %	± 5	
3.5.2. **Thermal evaporation**		
Evaporation element type	Resistive evaporators. At least two of them should be crucible type	
Number of evaporators, pcs	4	
Number of shutters, pc	1	
Crucible inner capacity, cm^3	not more than1.2	
Base pressure, Torr	Not higher than $1x\ 10^{-6}$	
Working pressure range, Torr	$1x\ 10^{-5}$ to $1x10^{-4}$	
Number of evaporator feeding sources, pcs	4	
Evaporation temperature, ^oC	Up to 1500	
Distance from the evaporator up to the sample centre, mm	100…300	
Number of sample places, pc	1 with place of mask	
Distance between substrate and mask	Direct contact	
Boron nitride crucibles, pcs	5	
Aluminum oxide crucible, pcs	5	
Quartz crucible, pcs	5	
Molybdenum boats, pcs (if boats resistive evaporators are included)	20	
Tungsten boats, pcs (if boats resistive evaporators are included)	20	
3.5.3. **Sample heating**		

	Sample temperature, ^{o}C	Maximum 200	
	Heater type	The substrate may not be exposed to direct IR irradiation	
	The number of thermocouples for temperature measuring, pc	1	
	Maximum heater capacity, W	Indicated in Tenderer's specification	
	The number of heaters, pc	1	
3.5.4.	**Measuring instruments**		
	Quartz crystal resonance deposition speed measuring instruments, pcs	2 (1 on 2 sources with one power supply)	
	Quartz crystals for resonator, pcs	10	
	Resolution of deposition speed, Å/s	≤ 0.1	
		Provide start of sample deposition at the certain coating speed	
3.6.	**4th processing chamber – magnetron sputtering**		
3.6.1.	**Coating**		
	Materials	ITO, AZO, TiO_2, SiO_2, Al, Ti, et al.	
	Coating homogeneity, %	± 5	
3.6.2.	**Magnetron sputtering**		
	Coating deposition type	Material sputtering in the atmosphere of inert or reactive gas or their mixture	
	Magnetron type	A round flat target, diameter not	

	less than 2 inches	
The number of magnetrons, pcs	3	
The number of shutters over the sample, pc	1	
Medium distance from the target up to the sample, mm	100, with adjustment range ±50 mm	
Magnetron target slope angle, degrees	5…30	
Base pressure, Torr	Not higher than $1x\ 10^{-6}$	
Working pressure range, Torr	$(0.2\text{-}4)\ x10^{-2}$	
Process gases	Ar, O_2, H_2, N_2	
Mass flow controllers, pcs	4	
Power source	2 pc pulsed DC, 1 pc RF (manually switchable, jointly with the 5th processing chamber) 1 pc pulsed DC and 1 pc RF (codeposition from two synchronized DC and RF power supplies in one time)	
Power, kW	As requested for the target size	
The number of sample places, pc	1	
Sample rotation speed, min^{-1}	Up to 10	
3.6.3. **Sample heating**		
Sample temperature, ^oC	Maximum 400	
Heater type	Indicated in Tenderer's specification	
The number of thermocouples for temperature measuring, pc	1	
Maximum heater capacity, W	Indicated in Tenderer's specification	
The number of heaters, pc	1	
3.6.4. **Measuring instruments:**		

	Hardware for Plasma optical spectroscopy channels, excluding the spectrophotometers, pcs	3 channels (1 channel at each magnetron)	
3.6.5.	**Gas delivery system**		
	Gas flows range	Indicated in Tenderer's specification, corresponding to the used vacuum pumps and the necessary working pressure	
	Geometry of input of gases	Indicated in Tenderer's specification	
3.7.	**5th processing chamber – magnetron sputtering (for obtaining of silicon PIN structures)**		
3.7.1.	**Coating**		
	Materials	Alloyed or pure silicon	
	Coating homogeneity, %	± 10	
3.7.2.	**Magnetron sputtering**		
	Coating deposition type	Material sputtering in the atmosphere of inert or reactive gas or their mixture	
	Magnetron type	A round flat target, diameter not less than 2 inches	
	The number of magnetrons, pcs	3	
	The number of shutters over the sample, pc.	1	
	Medium distance from the target up to the sample, mm	100, with adjustment range ±50 mm	

	Magnetron target slope angle, degrees	5…30	
	Base pressure, Torr	Not higher than 1x 10^{-6}	
	Working pressure, Torr	(0.2-4) x10^{-2}	
	Process gases	Ar, H_2	
	Mass flow controllers, pcs	2	
	Power source	2 pc pulsed DC, 1 pc RF (manually switchable, jointly with the 4th processing chamber) 1 pc pulsed DC and 1 pc RF (codeposition from two synchronized DC and RF power supplies in one time)	
	The number of sample places, pc	1	
	Sample rotation speed, min^{-1}	Up to 10	
3.7.3.	**Sample heating**		
	Sample temperature, ^oC	Maximum 400	
	Heater type	Indicated in Tenderer's specification	
	The number of thermocouples for temperature measuring, pc	1	
	Maximum heater capacity, W	Indicated in Tenderer's specification	
	The number of heaters, pc	1	
3.7.4.	**Gas delivery system**		
	Gas flows range	Indicated in Tenderer's specification, corresponding to the used vacuum pumps and the necessary working pressure	
	Geometry of input of gases	Indicated in Tenderer's	

specification		
3.8. Pumping system, flow regulators and pressure sensors		
Base pressure in central and processing chambers	Not higher than $1x\ 10^{-6}$	
Pumping time for the processing chamber (from atmosphere to $1x\ 10^{-6}$Torr)	< 45 min.	
In Tenderer's technical specification there are indicated pumping system components (incl. names of models)		
3.9. Plant dimensions		
In Tenderer's technical specification indicated are dimensions of the plant and separate chambers		
3.10. Engineering communications		
3.10.1. **Electric connection**		
Frequency, Hz	50 ± 0.2	
Voltage, V	Indicated in Tenderer's specification	
Connection type		
Installed capacity of the plant , kW	Indicated in Tenderer's specification	
3.10.2. **Compressed air**		
Pressure, bar	Requirements indicated in Tenderer's specification	
Dew point temperature, ^{o}C	Requirements indicated in Tenderer's specification	

Properties	Free from oil vapour and dust	
3.11. Conditions of the use		
Temperature, ^{o}C	20 ± 5	
Relative moisture, %	The range indicated in Tenderer's specification	
4. PLANT DESCRIPTION		
4.1. General description		
4.1.1. The plant is elaborated in accordance with ergonomic principles ensuring access to all parts of the plant for their servicing and replacement. All parts and equipment of the plant are envisaged for the concrete processes by complying with the requirements of the specific temperature, pressure and reactive environment.		
4.1.2. All chambers are made of stainless steel. They are supported on several support legs. The interior surfaces of the chamber are electrically polished. All chambers are ensured with windows and lighting for viewing of the process and transfer of the sample.		
4.1.3. The plant is of a modular design. All chambers of the process are easily removable.		
4.1.4. The plant design shall foresee an input/output chamber equipped with the ion source for treatment of the sample surface, 4 processing chambers and 3 free places which in future may be used for attachment of other processing chambers. The central chamber is separated from processing chambers with a shutter valve through which ensured is placement of the sample into the processing chamber. Coating deposition processing chambers are equipped with additional 2 closed flanges.		
4.1.5. Each processing chamber may operate in an independent, the so-called solo mode. The input/output chamber can be operated simultaneously with other chambers. Placement of the sample is possible either through the		

input/output chamber and further through the central chamber shutter valve by means of the sample transfer mechanism or by opening the chamber door and manually placing the sample on the sample holding table.	
4.1.6. All processing chambers are equipped with in hinges secured doors enabling a possibility to easily get an access to the equipment available inside the chamber to place the mask and/or the sample onto the sample holding table in its foreseen place, in case of necessity to replace, to add the to-be-evaporated, to-be-sputtered material.	
4.1.7. In the interior of the coating deposition processing chamber envisaged there are fixtures for fixing of the steel or other material plate-type screens facilitating cleaning of the chamber after performance of the process.	
4.1.8. The organic compound thermal evaporation chamber substrate holding table is equipped with 3 positions for placement of the sample. The sample holding table is turn-able in order to ensure the placement of the sample over the necessary evaporation cell or a necessary position for transfer of the sample by the manipulator hand. The turning is ensured by the step driver.	
4.1.9. In the metal thermal evaporation chamber and in the both magnetron sputtering chambers the sample holding table is equipped with one position for placement of the sample.	
4.1.10. Mechanical motion (e.g., rotation) of the substrate holder is used in the metal thermal evaporation chamber and in both magnetron sputtering chambers to ensure a homogeneous coating.	
4.1.11. In the metal thermal evaporation chamber and in the both magnetron sputtering chambers for heating of the sample used is the infrared heater.	
4.1.12. In the organic substance thermal sublimation chamber heating/cooling of the sample takes place by using heat transfer agent circulation tubes. The base of the sample is in direct contact with the temperature controlled surface. In the cooling mode the cooling agent is gaseous or liquid-type.	

Precaution shall be taken to avoid water condensation in the cooling system.	
4.2. Sample holder	
4.2.1. A special sample holder will be used for sample transfer from one processing chamber to another. The sample holder is envisaged for 25x25 mm and 50x50 mm large samples. The size of the uncoated area (needed for sample fixture) is indicated in Tenderer's specification.	
4.3. Central chamber – transfer of the sample	
4.3.1. The central chamber is equipped with 8 flanges to which secured there are processing chambers.	
4.3.2. Transfer of the sample is carried out by means of the sample transfer mechanism. In the central chamber located there is a cassette for storage of 5-10 samples.	
4.4. 1st processing chamber – sample input/output, ion treatment	
4.4.1. The first processing chamber is envisaged for input/output of the sample from the plant, for treatment of the sample surface by ion flow and for delivery of the sample to the central chamber.	
4.4.2. In the ion treatment time the used process gases (Ar un O_2) are delivered by using two mass flow controllers (MFC).	
4.5. 2nd processing chamber – organic compound thermal evaporation	
4.5.1. The second processing chamber is envisaged for deposition of the organic substances onto the sample by use of 3 thermal sublimation cells.	
4.5.2. Each sublimation cell is equipped with an individual shutter. 3 quartz resonance heads are monitoring the rate of deposition Additional central shutter being operated by a pneumatic drive is used to protect the sample before the rate is established.	
4.5.3. In the chamber ensured is heating of the samples up to + 60^0 degrees and cooling up to -40^0 degrees by use of a plate-type heater/cooler with	

circulation tubes. **4.6. 3rd processing chamber – metal evaporation** 4.6.1. The third processing chamber is envisaged for metal deposition by use of 4 evaporators. 4.6.2. In the chamber placed there are 4 evaporation sources and 4 quartz resonators. Between the resonators and the sample there is a shutter operated by a pneumatic drive. 4.6.3. In the chamber ensured is heating of the sample up to $+200^0$ degrees. **4.7. 4th processing chamber – magnetron sputtering** 4.7.1. The fourth processing chamber is envisaged for deposition of various materials by use of 3 magnetrons. 4.7.2. In the chamber placed there are 3 magnetrons of which one or any two may operate simultaneously. The distance of the magnetron and its angle in relation to the sample may be altered. For the processing chamber delivered are 4 gases (Ar, O_2, N_2, H_2) by use of four gas flow controllers (MFC). Each magnetron has a separate gas distributor. 4.7.3. For ensuring of the coating deposition the 4th and 5th chamber is equipped with a common set of two pulsed DC power sources and one RF power source. 4.7.4. In the chamber ensured is heating of the sample up to $+ 400^0$ degrees. 4.7.5. The chamber is equipped with 3 plasma optical emission spectroscopy channels (one for each magnetron). **4.8. 5th processing chamber – magnetron sputtering (for obtaining of silicon PIN structures)** 4.8.1. The fifth processing chamber is envisaged for silicon based materials deposition onto the sample by use of 3 magnetrons. In the chamber it is envisaged deposition of coatings necessary for establishing of the PIN structure.	

4.8.2. In the chamber placed are 3 magnetrons of which one or any two may operate simultaneously. The magnetron distance up to the sample and its angle in relation to the sample may be altered. To the processing chamber delivered are 2 gases (Ar, H_2) by use of two gas flow controllers (MFC). Each magnetron has a separate gas distributor.	
4.8.3. For ensuring of the coating deposition process, the 4^{th} and 5^{th} chamber is equipped with joint two pulsing direct current power sources and one RF power source.	
4.8.4. In the chamber ensured is heating of the sample up to + 400^0 degrees.	
4.9. Pumping system	
4.9.1. The central chamber and each processing chamber is equipped with an individual pumping system consisting of one mechanical pump and one turbo-molecular pump.	
4.9.2. For the coating deposition processing chambers (2^{nd}, 3^{rd}, 4^{th} and 5^{th} processing chambers) between the chamber and the turbo-molecular pump installed there is a throttling valve. The pumping system in each chamber ensures the base pressure not higher than 1x 10^{-6} Torr.	
4.9.3. The vacuum sensors in the coating deposition chambers and between the mechanical and turbo-molecular pumps are specified in the Tenderer's specification.	
4.9.4. For air admission into the chamber there is envisaged an air supply valve and electromagnetic shutter valve.	
4.10. Engineering communications	
4.10.1. Electric cables, electric lines and gas lines as well as water and compressed air system engineering communications are mainly placed in distribution panels located over the plant or on the floor in compliance with customer's requirements.	
4.10.2. Engineering communications attachment points are coordinated with the	

customer during the plant elaboration time.	
5. ELECTRIC AND MANAGEMENT SYSTEM 5.1. The electric system is elaborated in accordance with 73/23 EEC directives. 5.2. The plant management system is PLC based. 5.3. The plant management system shall ensure the technological process management and control. 5.4. The management system shall ensure: • Pumping system management; • Manipulator management; • Magnetron sputtering management; • Heaters management; • Organic sublimation cells (Organic Molecular Evaporator) management; • Thermal evaporators management; • Gas delivery system management; • Ion source management; • Water cooling system management. 5.5. Each plant chamber has an individual pumping system. The management system ensures management of all pumps, valves and pumping system shutters by controlling pressure in each chamber and in the pumping system lines. The status of pumps, valves and shutters is reflected in the visualisation system. 5.6. The management system ensures management of the drive of the manipulator located in the central chamber by ensuring transfer of samples to any processing chamber. Placement of samples in chambers is reflected in the visualisation system. If the sample is removed/placed in the processing chamber through the chamber door, the operator shall introduce its management system. 5.7. The management system ensures management of the sample heaters in the	

processing chambers by ensuring stabilization of the heaters temperature. Setting and reflection of heaters temperature parameters is performed by using the visualisation system.	
5.8. The management system ensures management of the magnetron power sources by ensuring a possibility to alter magnetron mode by stabilisation of the power, voltage or the current intensity. Setting and reflection of magnetron operation parameters is performed by use of the visualisation system.	
5.9. The management system ensures management of 3 thermal sublimation cells for deposition of organic coatings on the sample in the second processing chamber. The management system regulates and stabilises temperature in each crucible evaporator. Thermal sublimation cells operation parameters (temperature, capacity) are reflected in the visualisation system. Thickness of the coating is measured by use of quartz resonators and the measurements obtained are reflected in the visualisation system.	
5.10. The management system ensures management of thermal evaporators in the third processing chamber by control of the coating thickness by use of quartz resonators. Setting of parameters is performed by use of the visualisation system.	
5.11. The management system performs management of the mass flow controllers (MFC) by ensuring delivery of working gases into processing chambers. Gas delivery systems parameters are set and reflected by use of the visualisation system.	
5.12. To ensure a better adhesion of the coating, in the first processing chamber there is performed treatment of the sample with ion flow. The management system performs management of ion sources with parameters control and process gas (Ar and O_2) delivery. Setting and reflection of ion source electric parameters and gas delivery parameters is performed by use of the visualisation system.	
5.13. The management system performs the plant cooling system monitoring and water flow control in cooling lines.	

5.14. By performing a technological cycle, according to operator's choice on the visualisation computer screen there is reflected information as follows: • Pumping system status; • Pressure in chambers and pumps; • Working parameters for power sources, heaters, ion sources, organic sublimation cells and thermal evaporators; • Gas delivery systems parameters; • Water cooling system status. 5.15. In the visualisation computer monitor there will be reflected details as follows: • Process; • Pumping system; • Water cooling system; • Water chiller status • Alarms and warnings. 5.16. Visualisation system ensures storage of process data and reflection of the data stored. 5.17. In the plant there are ensured blocking of the software and hardware, by ensuring safe operation of the personnel and by eliminating possible situations of averages related to falling out of executive devices or operator's faulty activities. 5.18. The management system operates in the following modes: • Manual management mode; • Semi-automatic management mode (automatic pumping-off in the central chamber and in each processing chamber). 5.19. In the complete set of the plant being delivered to customer there included are the management locker, all external cables, PC, management system prime codes, visualisation system license.	

6. PLANT ACCEPTANCE/DELIVERY AT THE TENDERER 6.1. The plant initially is mounted at the Tenderer. The first turn delivery/acceptance is organised in accordance with Acceptance/delivery tests programme the both parties have agreed on, and is performed by Customer's co-participation when met have been all requirements of the technical specification. 6.2. Customer shall ensure samples and coating materials for testing. 6.3. Testing results are included into the acceptance statement. The said documents certify readiness of the plant for delivery to the Customer. 6.4. Simultaneously with Acceptance/delivery tests there is organised training of the personnel.	
7. PLANT MOUNTING, ADJUSTMENT AND DELIVERY AT THE CUSTOMER 7.1. The Customer shall prepare premises envisaged for the plant, ensure necessary lifting devices and equipment in accordance with mounting drawings and arrangement of the premises, the parties have agreed beforehand on. 7.2. Delivery of the plant up to the room for mounting shall be organised and performed by Tenderer or a third person contracted by Tenderer. 7.3. When Customer has received the plant, the supplier representative shall perform system installation. The Customer shall provide all facilities such as compressed air, process gases at low pressure, electrical power, exhaust line, all in a distance up to 3 meter from the system final position. there shall arrive Tenderer's representatives (a team of engineers and employees) to mount and adjust the plant. Attachment, testing and control of electric devices shall take place by consulting with either Customer's authorised and qualified representative or licensed specialist to have been invited by Customer. 7.4. After completion of all mounting works and commencement of the plant operation there is effected testing in order to set conformity to the technical	

specification. Testing is effected in accordance with the Acceptance/delivery tests programme to have been agreed upon by the parties. Customer shall ensure samples and coating materials for testing. 7.5. Testing results are reflected in the delivery statement. The statement itself shall be a basis for the final agreement payment. The guarantee time shall begin from the day when the delivery statement having been signed. 7.6. Customer shall ensure all lifting devices necessary for mounting of the plant, for operation, maintenance and repair works, as well as necessary support of the Customer's personnel.	
8. PERSONNEL TRAINING 8.1. For Customer's employees ensured there shall be theoretical and practical training for the time when there is taking place testing of the plant at Tenderer's. Such training programme and duration of the Customer's team staying at the Tenderer's shall be arranged with the Customer not later than one month prior to testing of the plant. 8.2. During the plant mounting, adjustment and putting into operation the personnel indicated by the Customer may be trained and may participate in all mounting, adjustment and commencement of operation stages.	
9. DRAWINGS AND TECHNICAL DOCUMENTATION 9.1. Not later than a week after signing of the agreement Customer shall ensure Tenderer with the plant placement premises arrangement drawings (plans). 9.2. Not later than within one month time after signing of the agreement Tenderer shall ensure Customer with Planned works schedule. 9.3. Within 45 working days from the day when the advance payment has been received in the bank Tenderer shall ensure Client with documents as follows: • The proposal for mounting of the plant in accordance with the envisaged premises arrangement. All plant design alterations after signing of the accorded agreement having been performed upon Client's request will be at Client's account;	

• Electric and management system specification; • Mounting drawings for main plant parts; • Schematic diagrams (vacuum, electric, hydraulic, gas, pneumatic); • Risks protocol; • Acceptance/delivery tests programme; • A list of both: the parts to be procured and the suppliers; • A list of spare parts. 9.4. Within two weeks after sending of documents Customer's and Tenderer's representatives may discuss them in Customer's office (upon Customer's request). 9.5. Simultaneously with the plant the Tenderer shall supply Customer a full activities documentation package, by including therein: • Operator's technological card & Manual – 2 complete sets; • Maintenance technological card & Manual – 2 complete sets; • Electric and management schemes – 3 complete sets; • PLC and MMI prime code – 2 complete sets; • Suppliers' Manuals – 1 complete set; • Certificate of origin. 9.6. Technical documentation on the plant shall be supplied in two volumes in Latvian or English. All documentation and requirements in drawings shall be in English. Drawings shall be in SolidWorks and/or ACAD formats. Ensured shall be also an electronic copy of all documents and drawings.	
10. PACKING, TRANSPORTATION AND STORAGE 10.1. The plant shall be packed in containers ensuring its safety during transportation. Tenderer shall perform the plant preparation for transportation in compliance with the branch standards. 10.2. The plant shall be handed over to Transporters. Tenderer shall choose	

Transporters and coordinates it with Customer. 10.3. The plant shall be transported in containers suitable for the type of transportation. The number of containers shall be set after elaboration of the technical documentation.	
11. GUARANTEE 11.1. Tenderer shall guarantee operation of the plant in pure premises, fulfilment of parameters in compliance with the technical specification. 11.2. Within 12 months' time from the day when there is signed the delivery statement Tenderer shall ensure the plant repair and/or replacement of details having become invalid or threatening a proper operation of the plant if these defects have occurred not through fault of the Customer.	

Whereby we acknowledge that no circumstances exist preventing us from participation in the present Tender procedure and comply with the requirements stated in the technical specifications.

The signature of the Tenderer's authorised person:

_____	_____	_____
/Name, surname/	/Position/	/Signature/

_____ , _____ 2013
(place) (date)

ANNEX 5
to the Regulation of the Open Tender LU CFI 2013/8/ERDF
"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

SHALL BE FILLED IN BY THE TENDERER

FINANCIAL BID*

For the Procurement
"Delivery of the Multifunctional Cluster Plant for Deposition of Vacuum Coatings"

(Procurement will be performed within the ERDF Project
No.: 2011/0041/2DP/2.1.1.3.1/11/IPIA/VIAA/004 "Development of Scientific Infrastructure for the National Research Centre of Nanostructured and Multifunctional Materials, Constructions and Technologies")

No.	Position	Price*
1	The Plant without the 3rd processing chamber – metal evaporation and the 5th processing chamber – magnetron sputtering (for obtaining of silicon PIN structures)	
2	3rd processing chamber – metal evaporation **	
3	5th processing chamber – magnetron sputtering (for obtaining of silicon PIN structures) **	
	Total price of the Plant	

* The prices of the Financial Bid shall be stated with all the discounts and all the taxes imposed on the order, the VAT excluded. If the price is given in currency different from LVL, it will be converted in LVL according to the exchange rate fixed by the Bank of Latvia on the day of opening the bids.

** The price shall be given for the chamber together with equipment related to respective chamber but not necessary for function of the plant, if respective chamber is not installed.

The signature of the Tenderer's authorised person:

_____ _____ _____
/Name, surname/ /Position/ /Signature/

_____ , _____ 2013
(place) (date)