**PURCHASE CONTRACT**

*This purchase contract (“****Contract****”) was concluded pursuant to section 2079 et seq. of the act no.*

*89/2012 Coll., Civil Code (“****Civil Code****”), on the day, month and year stated below by and between:*

**Czech Technical University in Prague, Faculty of Electrical Engineering**

 Registered office: Jugoslávských partyzánů 1580/3,

 160 00 Prague 6 – Dejvice, Czech Republic

 Company identification No: 68407700

 Tax identification No.: CZ68407700

 Represented by: xxxxxxx, dean

 Bank details: xxxxxxx

 Bank account No.: xxxxxxx

 on the one side as the buyer (“**Buyer**”)

and

**CORNES Technologies USA**

 Registered office: 780 Montague Expressway, Suite 506,

 San Jose, CA 95131, USA

 Company identification No: D0056728

|  |  |
| --- | --- |
|  Tax identification No.:  | xxxxxxxxxxxxxxxxxxxxx |
|  Represented by:  | xxxxxxxxxxxxxxxxxxxxx  |
|  Registered in:  | xxxxxxxxxxxxxxxxxxxxx  |
|  Bank details:  | xxxxxxxxxxxxxxxxxxxxx |
|   | xxxxxxxxxxxxxxxxxxxxx |
|  Bank account No.:  | xxxxxxxxxxxxxxxxxxxxx  |
|  \* ABA #  | xxxxxxxxxxxxxxxxxxxxx |
|  \* SWIF#  | xxxxxxxxxxxxxxxxxxxxx |

 on the other side as the seller (“**Seller**”)

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

**WHEREAS**

1. The Buyer is a public contracting authority.
2. For the successful realization of the Project it is necessary to purchase the Object of Purchase (as defined below) in accordance with the act No. 134/2016 Coll., on Public Procurement Awarding.
3. The Seller wishes to provide the Object of Purchase to the Buyer for consideration
4. The Seller’s bid for the public procurement entitled **“CVD system for modification and growth of materials”*,*** and whose purpose was to procure the Object of Purchase (“**Public Procurement**”), was selected by the Buyer as the most suitable.

**IT WAS AGREED AS FOLLOWS:**

**I.**

**BASIC PROVISIONS**

* 1. Under this Contract the Seller shall hand over to the Buyer CVD System, which shall meet requirements listed in Annex 1 (*Technical Description of the Offered Performance*) to this Contract (“Object of Purchase”) and shall transfer to the Buyer ownership right to the Object of Purchase, and the Buyer shall take over the Object of Purchase and shall pay the Seller the Purchase Price (as defined below), all under the terms and conditions stipulated in this Contract.
	2. Under this Contract the Seller shall also carry out following activities (“Related

Activities”):

* + 1. to elaborate and hand over to the Buyer detailed instructions and manuals for operation and maintenance of the Object of Purchase in the extent specified in Annex 2 (Technical Specification), including list of spare parts, vacuum and gas connection schemes, electrical connection schemes (all in English, details will not be disclosed to 3rd parties);
		2. to handover the declaration of conformity of the Object of Purchase with the approved standards;
		3. to elaborate a list of particular items of the Object of Purchase for the purposes of control;
		4. to provide 2 days training of at least 2 competent persons;

1.3 The Seller promises to the Buyer that if for the fulfilment of the requirements of the Buyer under this Contract or the proper operation of the Object of Purchase are necessary other deliveries and activities not mentioned in this Contract, the Seller shall procure such deliveries or shall carry out such activities at its own expense without any effect on the Purchase Price.

**II.**

**TIME AND PLACE OF DELIVERY**

* 1. The Seller shall deliver the Object of Purchase and shall carry out Related Activities within 20 weeks from the effectiveness of this Contract.
	2. The Seller is responsible for shipping the Object of Purchase to the Place of delivery. The place of delivery is: CTU in Prague, FEE, Dpt. of Physics xxxxxxxxxxxxxxxxxxxxxxx
	xxxxxxxxxxxxxxxxxxxxxxxxxxx.

**III.**

**THE OWNERSHIP RIGHT**

3.1 The ownership right to the Object of Purchase shall be transferred to the Buyer upon the signature of the Handover Protocol (as defined below) by both Parties.

**IV.**

**PRICE AND PAYMENT TERMS**

* 1. The purchase price for the Object of Purchase is 8,620,000 CZK without value added tax (“**VAT**”), and with the VAT rate 21 % (if applicable in this case) is 10,430,200 CZK (“**Purchase Price**”).
	2. The Purchase Price cannot be exceeded and includes all costs and expenses of the Seller related to the performance of this Contract. The Purchase Price includes, among others, all expenses related to the handover of the Object of Purchase and execution of Related Activities, costs of copyright, insurance, warranty service and any other costs and expenses connected with the performance of this Contract.
	3. The Purchase Price may be changed only if:
		1. in the period between the conclusion of this Contract and the signature of the Handover Protocol the rates of VAT are changed (in such a case the new price for the Object of Purchase shall only reflect the new rate of VAT) or if
		2. the change is done in accordance with the act No. 134/2016 Coll., on Public Procurement Awarding.
	4. The Purchase Price for the Object of Purchase shall be paid in CZK on the basis of a tax documents – invoices, to the account of the Seller designated in the invoice.
	5. The Buyer shall realize payments on the basis of duly issued invoices within 15 days from their receipt. The invoice shall be considered to be paid for on the day when the invoiced amount is deducted from the Buyer’s account on behalf of the Seller’s account.
	6. The invoice issued by the Seller as a tax document must contain all information required by the applicable laws of the Czech Republic. Invoices issued by the Seller in accordance with this Contract shall contain in particular following information:
		1. name and registered office of the Buyer,
		2. tax identification number of the Buyer,
		3. name and registered office of the Seller,
		4. tax identification number of the Seller,
		5. registration number of the tax document,
		6. scope of the performance (including the reference to this Contract),
		7. the date of the issue of the tax document,
		8. the date of the fulfilment of the Contract,
		9. Purchase Price (must be corresponding with the price in Order and Quotation),
		10. Identification of Buyer’s order,

and must comply with the double tax avoidance agreements, if applicable.

4.7. In case that the invoice shall not contain the above mentioned information, the Buyer is entitled to return it to the Seller during it maturity period and this shall not be considered as a default. The new maturity period shall begin from the receipt of the supplemented or corrected invoice to the Buyer.

**V.**

**SELLER’S DUTIES**

* 1. The Seller shall ensure that the Object of Purchase and Related Activities are in compliance with this Contract including all its annexes and applicable legal (e.g. safety), technical and quality norms.
	2. During the performance of this Contract the Seller proceeds independently. If the Seller receives instructions from the Buyer, the Seller shall follow such instructions unless these are against the law or in contradiction to this Contract. If the Seller finds out or should have found out if professional care was exercised that the instructions are for any reason inappropriate or illegal or in contradiction to this Contract, then the Seller must notify the Buyer.
	3. All things necessary for the performance of this Contract shall procure the Seller, unless this Contract stipulates otherwise.
	4. The Seller is aware that the Buyer does not have at its disposal premises for the storage of packaging and, therefore, shall not store packaging of the Object of Purchase. The absence of original packaging cannot be an excuse for refusal of elimination of defects of the Object of Purchase.

**VI.**

**WARRANTY**

* 1. The Seller shall provide a warranty of quality of the Object of Purchase for the period of 36 months and 60 months for the microwave power unit. If on the warranty list or other document is the warranty period of longer duration, then this longer warranty period shall have priority over the period stated in this Contract.
	2. The warranty period shall begin on the day of the Object of Purchase commissioning.
	3. The Seller shall remove defects that occur during the warranty period free of charge and in the terms stipulated in this Contract.
	4. If the Buyer ascertains a defect of the Object of Purchase during the warranty period, the Buyer shall notify such defect without undue delay to the Seller. Defects may be notified on the last day of warranty period, at the latest.
	5. Buyer shall notify the Seller of warranty defects by telephone, in writing or by e-mail. The Seller shall accept notifications of defects on the following e-mail address: xxxxxxxxxxxxxxxxxxxxx. The Seller shall confirm within 3 days from the receipt of the notification with information about the request acceptance, a suggestion of solution and the term of a defect removal.
	6. In the notification the Buyer shall describe the defect and the manner of removal of the defect. The Buyer has the right to:
		1. ask for the removal of the defect by the delivery of a new Object of Purchase or its individual parts, or
		2. ask for the removal of the defect by repair, or
		3. ask for the reasonable reduction of the Purchase Price.

The choice among the above mentioned rights belongs to the Buyer. The Buyer is also entitled to withdraw from this Contract, if by delivering the Object of Purchase with defects this Contract is substantially breached. The Contract shall also be substantially breached in case that the same defect occurred repeatedly, i.e. more than three times.

* 1. The Seller shall remove the defect within 14 days from its notification, unless Parties agree otherwise.
	2. The Seller shall remove the defect within terms stipulated in this Contract even if the notification of the defect is in his opinion unjustified. In such a case the Seller is entitled to ask for reimbursement of the costs of removal of the defect. If Parties disagree on whether the notification of the defect is justified or not, the Buyer shall ask an expert for the expert’s opinion, which shall determine whether the notification of the defect was justified or not. In the case that the expert considers the notification as justified, then the Seller shall bear costs of the expert’s opinion. If the expert considers the notification to be unjustified, then the Buyer shall reimburse the Seller for verifiably and effectively incurred costs of removal of the defect.
	3. Parties shall execute a protocol on the removal of the defect, which shall contain the description of the defect and the confirmation that the defect was removed. In the case of repair in the warranty period, this period shall be extended by a period of time that elapses between the notification of the defect until its removal.
	4. In case that the Seller does not remove the defect within stipulated time or if the Seller refuses to remove the defect, then the Buyer is entitled to remove the defect at his own costs and the Seller shall reimburse these costs within 10 days after the Buyer’s invoice delivery.
	5. The warranty does not cover defects caused by unprofessional manipulation or by the failure to follow Seller’s instructions for the operation and maintenance of the Object of Purchase.
	6. Parties exclude the application of Section 1925 of the Civil Code.

**VII.**

**REPRESENTATIONS AND WARRANTIES OF THE SELLER**

7.1. The Seller represents and warrants to the Buyer that

* + 1. has all the professional prerequisites necessary for the proper fulfilment of this

Contract,

* + 1. is fully authorized to perform this Contract, and
		2. there are no obstacles on the Seller’s side that would preclude him from the due performance of this Contract.

**VIII.**

**PENALTIES**

* 1. If the Seller is in default regarding the delivery of the Object of Purchase, i.e. the Seller breaches its duty to perform this Contract in time and due manner, the Seller shall pay to the Buyer a contractual penalty in the amount of 0,1% of the Purchase Price for every (even commenced) day of default.
	2. If the Seller is in delay with the removal of the defect, the Seller shall pay to the Buyer a contractual penalty in the amount of 0,05% of the Purchase Price for every (even commenced) day of default.
	3. The Seller shall pay contractual penalties within fifteen (15) days from the day, on which the Buyer enumerated its claims. The payment of contractual penalties shall not affect the right of the Buyer to damages even to the extent to which such damages exceeds the contractual penalty.
	4. Total amount of contractual penalties that the Buyer is entitled to claim shall not exceed 30 % of the Purchase Price.
	5. The Buyer is entitled to unilaterally set off claims arising from the contractual penalties against the claim of the Seller for the payment of the Purchase Price.
	6. Parties exclude the Section 2050 of the Civil Code.

**IX.**

**RIGHT OF WITHDRAWAL**

9.1. The Buyer is entitled to withdraw from this Contract without any penalties, if any of the following circumstances occur:

* + 1. the Seller shall be in delay with the fulfilment of this Contract and such delay lasts more than two (2) months;
		2. the Object of Purchase shall not fulfil the requirements stipulated in this Contract, in particular in Annex 1 (Technical Specification);
		3. the insolvency proceeding is initiated against the Seller; or
		4. the Buyer ascertains that the Seller provided in its bid for the Public Procurement information or documents that do not correspond to the reality and that had or could have had impact on the result of the tendering procedure, which preceded the conclusion of this Contract.

**X.**

**CONFIDENTIALITY**

10.1. Parties shall not disclose information that shall become available to them in connection with this Contract and its performance and whose disclosure could harm the other Party. Duties of the Buyer ensuing from the applicable legal regulations remain unaffected.

**XI.**

**REPRESENTATIVES OF THE PARTIES**

* 1. The Seller appoints following representatives for the communication with the Buyer:

In technical matters:

Name: xxxxxxxxxxxxxxxxxxxxx

E-mail: xxxxxxxxxxxxxxxxxxxxx

Tel.: xxxxxxxxxxxxxxxxxxxxx

In contractual matters:

Name: xxxxxxxxxxxxxxxxxxxxx

E-mail: xxxxxxxxxxxxxxxxxxxxx

Tel.: xxxxxxxxxxxxxxxxxxxxx

* 1. The Buyer appoints following representatives for the communication with the Seller:

Name: xxxxxxxxxxxxxxxxxxxxx

E-mail: xxxxxxxxxxxxxxxxxxxxx

**XII.**

**FINAL PROVISIONS**

* 1. This Contract is governed by the laws of the Czech Republic, especially by the Civil Code.
	2. The Parties agree with publication of this Contract in the register of contracts pursuant to the Act no. 340/2015 Coll., On the Register of Contracts, as amended. The publication shall be ensured by the Czech Technical University in Prague; if one of the parties considers some of the information specified in the Contract for personal information or trade secrets, or data that may be to publish under the Act, such information must be explicitly identified as such during the contracting process.
	3. All disputes arising out of this Contract or out of legal relations connected with this Contract shall be preferable settled by a mutual negotiation. In case that the dispute is not settled within sixty (60) days, such dispute shall be decided by courts of the Czech Republic in the procedure initiated by one of the Parties.
	4. The Seller bears the risk of changed circumstances within the meaning of Section 1765 of the Civil Code.
	5. The Seller takes into account that the Buyer is not in relation to this Contract an entrepreneur, nor the subject matter of this Contract is connected with the business activities of the Buyer.
	6. The Seller is not entitled to set off any of its claims or his debtor’s claims against the Buyer’s claims. The Seller is not entitled to transfer its claims against Buyer that arose on the basis or in connection with this Contract on third parties. The Seller is not entitled to transfer rights and duties from this Contract or its part on third parties.
	7. All modifications and supplements of this Contract must be in writing.
	8. If any of provisions of this Contract are invalid or ineffective, the Parties are bound to change this Contract is such a way that the invalid or ineffective provision is replaced by a new provision that is valid and effective and to the maximum possible extent correspond to the original invalid or ineffective provision.
	9. If any Party breaches any duty under this Contract and knows or should have known about such breach, it shall notify it to the other Party and shall warn such Party of possible consequences of the breach.
	10. This Contract is executed in four (4) counterparts and every Party shall receive two (2) counterparts.
	11. An integral part of this Contract is Annex 1 (Technical Description of the Offered Performance) and Annex 2 (Technical specifications) In case of any discrepancy between the provisions of this Contract and the provisions of Annex 1 (Technical Description of the Offered Performance) the provisions of this Contract shall prevail.
	12. This Contract shall be valid and effective on the date of the signature of both Parties.

|  |  |  |
| --- | --- | --- |
| In Prague, on 10.5.2019     |   | In Massy, France, on 23.5.2019 |
| ……………………………………….. |  |  | …………………………………….. |
| for the Buyer |  |   | for the Seller |
| xxxxxxx |  |  | xxxxxxxxxxxxxxxxxxxxx |
| dean |  |  | CORNES Technologies USA |

**ANNEX1**

**TECHNICAL DESCRIPTION OF THE OFFERED PERFORMANCE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item No.**  | **Description of the parameter**  | **Required value**  | **Offered Value**  | **Meets Y/N** |
| 1  | based on microwave plasma enhanced chemical vapor deposition  | YES  | Microwave plasma excitation is provided by a Muegge power supply capable of providing 6kW at 2.45 GHz to a resonant over mode plasma cavity  | Yes |
| 2  | sample holder  | compatible to fit in substrate with diameter up to 4”  | The sample holder consists of a 22cm in diameter stage, on which can be accommodated a substrate holder that can hosts substrates from 1 to 8 inch, although the system is designed to be able to grow on 2 to 4 inches in diameter.  | Yes |
| 3  | inhomogeneity of coating  | across 2” lower than 10%, across 3” lower than 25 %  | Using specific plasma conditions as provided with the equipment, the mean value of the coating thickness over a 1mm2 average spot size of the thickness for substrates from 100nm to several tens of microns exhibit less than 10% inhomogeneity across 2” and 25% over 3”.  | Yes |
| 4  | deposition temperature  | range from 400 °C to 1000 °C  | The deposition temperature can be varied from 400°C to 1100°C, although under 600°C the deposition rates remain very low (< 0.1µm/h).  | Yes |
| 5  | water-cooled metal vacuum chamber with optical viewports  | YES  | All Aluminium made, the chamber is water cooled and offer 10 view ports in the lateral plane of the substrate holder, and 4 viewports from above the substrate.  | Yes |
| 6  | quartz or glass materials (such as microwave window or bell jar) isolated from any contact with plasma  | YES  | The plasma cavity is located on the other side of the microwave transparent window made of quartz. This so called “overmode” geometry fully prevent any interaction of the plasma with any quartz of glass material. | Yes |
| 7  | quick access door for sample loading  | at least 20 cm in diameter  | The door is over 30 cm in diameter, and samples with 20 cm in diameter can be positioned on the sample stage. | Yes |
| 8  | vacuum chamber  | leak-tested to at least 10-9 mbar·l/s or better  | The vacuum leak integrity is assessed using He leak detection to be below 1.0x10-9 torr.l/sec, thus 1.33 mbar l/sec.Base pressure as measured by the external pirani gauge should be less than 0.01 Torr (within 20 minutes) | Yes |
| 9  | vacuum unit based on rotary oil pumps  | YES  | The system is operated using a rotary vacuum pump equipped with an oil trap and providing 27.5 m3/h (50Hz) and a base pressure of 1 x 10-2 Torr | Yes |
| 10  | chamber base pressure  | 10-2 mbar or lower  | The base vacuum pressure of the chamber is assessed below 1.0 10-2 torr | Yes |
| 11  | automatic pressure control during the deposition process  | within the range 10 to 200 torr  | The system pressure control enables the use of operating pressures in the range 10 to 200 torr. | Yes |
| 12  | automatic, motorized microwave tuner  | YES  | The system is equipped with an auto tuner | Yes |
| 13  | two-color IR pyrometer for substrate temperature monitoring through optical fiber with digital display  | temperature range at least 375 to 1150 °C  | Muegge's automatic tuner can select automatic or manual stub position setting by tuner control program from control computer. | Yes |
| 14 | microwave power supply  | at least 6 kW compatible with 2.45 GHz (CW and pulsable regime available), one spare part magnetron must be included  | Muegge power supply as used in SEKI SDS6K, namely model number MX6000D is pulsable from 5Hz to 2.5 kHz, with pulse On and Off time from200µs to 100ms. | Yes |
| 15 | full range vacuum gauge and high accuracy process pressure gauge with digital displays, automatic process pressure control  | YES  | The process pressure is t-monitored using a pressure gauged Baratron type capacitance manometer, insensitive to gas composition. Process pressure is monitored like all process parameters by control computer-based and software controlled, with Graphical User Interface(GUI) and controls for interactive recipe development, monitoring and alarm point updates. | Yes |
| 16  | 6 mass flow controllers to control gas flow, flowmeter calibration and specific sccm ranges  | YES  | 6 high accuracy MFC are provided, with following gas and ranges:Gas:Hydrogen (H2): 1000 sccmMethane (CH4): 100 sccmNitrogen (in H2): 2 sccmOxygen (O2): 20 sccmAr (Ar): 100sccmBoron (TMB in H2): 50 sccm(adjustable according to gas mixture) | Yes |
| 17  | adjustable gas correction factors of mass flow controllers within software or hardware  | YES  | Adjustable zero correction factor both from software and hardware | Yes |
| 18  | in plane and top view plasma and substrate viewing/diagnostic ports  | YES  | 10 diagnostic ports around the chamber and 4 on the top above the plasma | Yes |
| 19  | plasma characterization using optical emission spectroscopy  | within the range from 200 to 1100 nm, at least 1200/mm resolution, high speed, connection to computer, using dedicated port/flange  | USB driven OES spectrometer with range from200 to 1100 nm, enabling resolution of 0.1 to10nm (at FWHM), integration time of max 3.8ms(configuration dependent), read by computer using dedicated USB connection. To comply with 1200/mm resolution, several spectrometers may be provided to meet the required value: 3 Ocean Optics Flame S spectrometers with optimized gratings need to be combined to meet the requirement  | Yes |
| 20  | standard gas connections and internal flow meter connections  | all VCR 1/4”, no Swagelok  | All standard gas lines inlets are 1/4” VCR-Male.  | Yes  |
| 21  | system operation fully automated, controlled with computer, **suitable computer included**  | YES  | The SDS6K is computer-based and software controlled, with Graphical User Interface (GUI) and controls for interactive recipe development, monitoring and alarm point updates. A Specific application software handles Apps Files (Recipe Operation, Alarm and Interlock Fault Sequencing Operation) and keep an event log of all parameters (Microwave Power (FWD & REF), Gas Flow, Dual Wavelength IR Pyrometer Temperature, Pressure.  | Yes  |
| 22  | manual and automatic recipe driven operation with data logging of process parameter  | YES  | The specific control software enables recipe driven processes to be run in automatic mode or semi-automatic. The recipe editor allows to memorize and edit recipes, that can be written as 100 steps of operation.  | Yes  |
| 23  | possible online monitoring of deposition parameters, including remote access via internet  | YES  | Automatic as well as semi automatic modes enable continuous parameter logging, namely Microwave Power (FWD & REF), Gas Flow, Dual Wavelength IR Pyrometer Temperature, and pressure. Similarly, the Alarm Logger tracks and memorize all alarms that happens and show alarm detail in the alarm history log. Remote operation can be performed using conventional windows 7 remote operability and protected by password.  | Yes  |
| 24  | hardware and software safety interlocks  | YES  | Hardware interlock are provided on the power supply and is used to control external errors. Software interlocks are driven by the automatic control and prevent abnormal use from all setpoint not matching, namely Pump Abnormal, Soft Rough Time Interval exceeded, Rough time interval exceeded, MW generator error, Ref power, over pressure, Manifold pressure error, Low pressure, low coolant flows or pressures (in circuit, system, stage, and power supply), low process gas flow or pressure, etc.  | Yes  |
| 25  | possibility of future upgrade to sample rotation  | YES  | The ultra large base plate (> 200mm) enables several upgrades that could be implemented at a later stage, that includes today a Z-stage and future developments could enable rotating substrate holder.  | Yes  |
| 26  | possibility of future upgrade to substrate bias or electrically floating upper electrode with electrical connection  | YES  | Similarly, the sample stage can also be modified to be bias able with respect to the chamber walls, thus enabling bias enhanced nucleation.  | Yes  |

**ANNEX 2**

**TECHNICAL SPECIFICATIONS**