

## Research Subcontract Agreement

No. 24088210 ("Subcontract")

Under North Atlantic Treaty Organization (NATO) ("Prime Sponsor") Prime Contract No. G5453 ("Prime Contract")

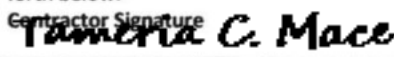
This Subcontract is entered into between the Prime Contractor and Subcontractor named below for the performance of a portion of the Scope of Work originally awarded to the Prime Contractor. The parties agree to the following terms and conditions:

<b>Prime Contractor ("Contractor")</b> Name: The University of Central Florida Research Foundation, Inc. ("UCFRF"), a non-profit direct support organization acting on behalf of and as an instrumentality of the University of Central Florida Board of Trustees ("UCF") Address: 12201 Research Parkway, Suite 501, Orlando, FL 32826 DUNS: 784933843	<b>Subcontractor ("Subcontractor")</b> Name: Vasyl Stefanyk Precarpathian National University  Address: Shevchenko Str. 57 Ivano-Frankivsk, 76018 Ukraine DUNS: 363766352
Prime Contractor PI Name: Leonid Chernyak	Subcontractor PI Name: Prof. Lyubomyr Nykyruy
<b>Subcontract Period of Performance:</b> Budget Period: From: 12/1/2020 Through: 8/31/2021 Total Project Period: From: 12/1/2020 Through: 8/31/2021	<b>Contract Value:</b> Funding This Action: \$10,000 USD Total Funding to Date: \$10,000 USD Anticipated Total Contract Value: \$10,000 USD
<b>Subcontract Type:</b> Fixed Price	

**Project Title:** Radiation Hard UV Detectors Against Terrorist Threats

- Subcontractor's Work:** Subcontractor shall supply all personnel, equipment, and materials necessary to accomplish the tasks set forth in Attachment 3, "Subcontractor Statement of Work and Reporting Requirements," which is hereby made part of this Subcontract.
- Limitation on Price:** Contractor is not liable for any payment in excess of the amount listed above as "Total Funding to Date" without prior written authorization from Contractor. Attachment 4, "Payment Schedule," is hereby made part of this Subcontract.
- Payment:** Contractor shall pay Subcontractor in accordance with the payment schedule shown in Attachment 4. Contractor will be paid 30% of the Total Contract Value equal to \$3,000 USD upon execution of this Subcontract. All invoices shall be submitted using Subcontractor's standard invoice, but at a minimum shall include milestone/deliverable, payment amount, Subcontract number, and certification as to truth and accuracy of invoice. *Invoices that do not reference Subcontract Number may be returned to Subcontractor.* Invoices and questions concerning invoice receipt or payments should be directed to the appropriate party's Administrative Contract as shown in Attachments 2A & 2B. Contractor reserves the right to reject an invoice. All payments shall be made in U.S. Dollars. Any payments to be reimbursed to Subcontractor made by official telegraphic transfer shall be remitted to Subcontractor's bank account. In the event of telegraphic transfer payments to Subcontractor, any fees associated with telegraphic transfer, imposed by Ukraine, shall be paid by the Subcontractor and any fees associated with telegraphic transfer, imposed by the United States, will be the responsibility of the Contractor.
- Incorporation of Prime Contract:** In the performance of Subcontractor's Work, all applicable terms and conditions of Attachment 6, "Prime Contract Terms and Conditions," are hereby made part of this Subcontract.
- Incorporation of General Terms and Conditions:** In the performance of Subcontractor's Work, all terms and conditions in Attachment 1, "General Terms and Conditions" are hereby made part of this Subcontract.
- Order of Precedence:** Any inconsistencies in this Subcontract shall be resolved by giving precedence in the following order:
  - Attachment 1, "General Terms and Conditions";
  - Attachment 5, "Prime Contract";
  - Attachment 6, "Prime Contract Terms and Conditions";
  - Attachment 3, "Subcontractor Statement of Work and Deliverables";
  - Attachment 4, "Subcontractor's Budget and Payment Schedule";
  - Attachment 7, "Intellectual Property Rights Agreement";
- Key Personnel:** Subcontractor's Principal Investigator, **Lyubomyr Nykyruy**, is considered essential to the work to be performed under this Subcontract. Substitution or substantial reduction in commitment of Subcontractor's Principal Investigator requires the prior written approval of Contractor. In the event that Subcontractor notifies Contractor that it desires to replace Subcontractor's Principal Investigator, Subcontractor shall notify Contractor in writing within fifteen (15) business days of the date of such replacement and shall propose a substitute principal investigator, identifying the proposed substitute in the notice. Contractor shall notify Subcontractor within fifteen (15) business days after receipt of such notice of its decision either to continue the Subcontract with the substitute principal investigator or to terminate the Subcontract.
- Entire Agreement:** This Subcontract constitutes the entire agreement between the parties regarding the subject matter herein. Unless otherwise provided for in Attachment 1, any modification to this Subcontract shall be made in writing and must be signed by an authorized representative of each party.

**IN WITNESS WHEREOF,** duly authorized representative of the parties have entered into this Subcontract as of the date of the last signature set forth below:

Contractor Signature  
  
Name: Tamera C. Mace, MBA  
Title: Manager, Sponsored Programs  
Date: Signed: Thursday, December 17, 2020

Subcontractor Signature  
  
Name: Ihor Tsependa  
Title: Rector of Vasyl Stefanyk Precarpathian National University  
Date:

**Research Subcontract**  
**Attachment 1**  
**General Terms and Conditions**  
**Subcontract No. 24088210**

1. **Independent Contractor.** The Subcontractor is engaged as an independent contractor. Nothing in the Subcontract is intended to, or shall be deemed to, constitute a partnership or joint venture between the parties. No party has the authority to bind any other party in contract or to incur any debts or obligations on behalf of any other party, and no party (including any employee or other representative of a party with responsibility for program matters) shall take any action that attempts or purports to bind any other party in contract or to incur any debts or obligations on behalf of any other party, without the affected party's prior written approval.
2. **Publicity/Use of Name.** Neither party shall use the name of the other party, or the name of any faculty member, employee, or student of the other party, in connection with any product, service, promotion, news release, or other publicity without the prior written permission of the other party and, if an individual's name be concerned, of that individual.
3. **Publication.** Each party shall have the right to publish and disseminate information derived from the performance of work under this Subcontract. Qualification for authorship shall be in keeping with generally accepted criteria. Each party shall provide the other party with a copy of any proposed publication for review and comment at least thirty (30) days prior to submission. A party wishing to publish shall provide the non-publishing party with a copy of any proposed publication or presentation at least thirty (30) days in advance to allow the non-publishing party to review such publication or presentation for its Confidential Information or information that would adversely affect its ability to file for patent protection. The non-publishing party can request a publication delay of up to sixty (60) calendar days from the time it raises such an objection. On or after sixty (60) calendar days following the request for the publication delay, the publication is permitted. In the absence of timely objection, the publishing party may proceed with publication. In the event the non-publishing party objects, the parties shall negotiate in good faith the removal of the objectionable material.
4. **Intellectual Property.** The parties have executed an Intellectual Property Rights Agreement with an effective Date 12/17/20 which is incorporated herein by reference and attached as Attachment 7.
5. **Confidentiality.** The parties have executed an Intellectual Property Rights Agreement that contains Article 5 Confidentiality with an effective Date 12/17/20 which is incorporated herein by reference and attached as Attachment 7.
6. **Export Controls.** This Subcontract is made subject to any restrictions concerning the export of technologies, including technical information from the United States or other countries that may be imposed on the parties from time to time. Each party agrees that it will not export, directly or indirectly, any technology acquired from the other party under this Agreement to a location or in a manner that at the time of export requires an export license or other governmental approval, without first obtaining the written consent to do so from the appropriate agency or other governmental entity in accordance with applicable law. The Parties agree that neither Party will use any technologies received from the other Party under this Subcontract in the furtherance of any chemical, biological, nuclear, and/or weapon activities.
7. **Classified Research.** The parties agree there will be no classified research performed under this Subcontract.
8. **Limitation of Liability.** Each party shall be responsible for its negligent acts or omissions and the negligent acts or omissions of its employees, officers, or director's, to the extent allowed by law. Each Party assumes any and all risks of personal injury and property damage attributable to the negligent acts or omissions of that Party and its officers, employees, servants, and agents thereof while acting within the scope of their employment. Contractor expressly retains, without waiver beyond statutory waiver, all rights, benefits, and immunities of sovereign immunity in accordance with Section 768.28, Florida Statutes.
9. **Insurance.** Subcontractor represents that it carries sufficient insurance coverage to comply with the requirements of federal, state and local laws as well as its obligations under this Subcontract.
10. **Termination.** Either party shall have the right to terminate this Subcontract with thirty (30) days written notice to the other party. In the event that Prime Sponsor terminates Prime Contract, Contractor shall terminate this Subcontract in accordance with the terms of the Prime Contract. Upon termination, Subcontractor shall be reimbursed for allowable costs and non-cancelable obligations incurred prior to the date of termination and shall furnish all necessary data and final reports, in accordance with Attachments 4 and 5, on the research completed or in progress through the date of termination.
11. **Closeout.** Along with any other reports or deliverables required hereunder, Subcontractor shall submit its final invoice and release and assignment to Contractor within five (5) calendar days following completion of the period of performance of this Subcontract. In the event that quick closeout is requested by Contractor, Subcontractor shall comply with FAR Part 42.708 to complete Subcontract closeout. Payment of the final invoice will be withheld pending:
  - Completion, submission, and acceptance by Contractor of all work performed under the Statement of Work;
  - Completion of Subcontractor's Release Form, including patent/invention report, and property report; and
  - Clear, visible, and proper marking of "final invoice" on the actual final invoice.
12. **HIPAA/PHI.** There \_\_\_\_ will X will not be personal health information (PHI) or personally identifiable information (PII)



involved in this project. (If yes, need to include data management clause)

13. Audit. All costs incurred in the performance of this Agreement will be subject to audit by any cognizant audit agency.
14. Force Majeure. Except as otherwise provided herein, neither party shall be obligated to perform, and neither party shall be deemed to be in default of its performance, if prevented by: (a) fire, earthquake, hurricane, wind, flood, act of God, riot, epidemic, or default of a common carrier, or civil commotion or (b) any law, ordinance, rule, regulation, or order of any public or military authority stemming from the existence of economic or energy controls, hostilities, war, or governmental law and regulation, or (c) labor dispute which results in a strike or work stoppage affecting the performance under this Subcontract.
15. Disputes. The parties shall attempt to resolve all disputes through informal means. Each party agrees that, prior to resorting to litigation to resolve any dispute, it will confer with the other party to determine whether other procedures that are less expensive or less time consuming can be adopted to resolve the dispute.
16. Anti-kickback. Subcontractor represents that no part of the total Subcontract amount provided herein shall be paid directly or indirectly to any officer or employee of Contractor or Prime Sponsor as wages, compensation, or gifts in exchange for acting as officer, agent, employee, subcontractor, or consultant to Subcontractor in connection with any work contemplated or performed relative to this Subcontract.
17. Assignment. SUBCONTRACTOR may not assign or transfer its rights and remedies nor transfer its obligations or subcontract for any of the services to be performed under this Subcontract, in whole or part, without the prior written consent of CONTRACTOR.
18. Severability. If any provision of this Subcontract or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Subcontract which can be given effect without the invalid provision, and to this end the provisions of this Subcontract are declared to be severable.
19. Integration. This Subcontract and Attachments contain the entire agreement between the parties, and no statements, promises, or inducements made by either party or agent of either party that are not contained in this written Subcontract shall be valid or binding; and this Subcontract may not be enlarged, modified, or altered except in writing signed by the parties.
20. Waiver. No waiver of any term or provision of this Subcontract whether by conduct or otherwise in any one or more instances shall be deemed to be, or construed as, a further or continuing waiver of any such term or provision, or of any other term or provision, of this Subcontract.
21. Amendments. The Contractor may issue certain changes to the Period of Performance and budget: ☐ Unilaterally ☒ Bilaterally. Unilateral modifications shall be considered valid 14 days after receipt unless otherwise indicated in writing by Subcontractor. Except as expressly set forth in this section, no subsequent amendment, modification or addition to this Subcontract will be binding upon the parties hereto unless reduced to writing and signed by the respective authorized representatives of Contractor and Subcontractor.
22. Counterparts. This Subcontract may be executed simultaneously in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same agreement. The parties agree that a party's signature on this Subcontract that is exchanged by portable document format (PDF) or facsimile shall have the effect of original signature of the party for all purposes.
23. Limitation of Damages. In no event will either Party be responsible for any indirect damages, incidental damages, consequential damages, exemplary damages of any kind, lost goodwill, lost profits, lost business and/or any indirect economic damages whatsoever regardless of whether such damages arise from claims based upon contract, negligence, tort (including strict liability or other legal theory), a breach of any term of this Subcontract, and regardless of whether it was advised or had reason to know of the possibility of incurring such damages in advance.
24. Remedies. The parties understand and agree that a party may suffer irreparable harm in the event that the other party, or its employees, servants or agents breach any of the obligations under this Subcontract and that monetary damages may be inadequate to compensate for such breach. Accordingly, the parties agree that in the event of a breach or threatened breach by a party of any of the provisions of this Subcontract, a party, in addition to and not in limitation of any other available rights, remedies or damages, shall be entitled to seek a temporary restraining order, preliminary injunction and permanent injunction in order to prevent or to restrain any such breach by the party, its employees, servants, agents and any and all persons directly or indirectly acting for the party.

<b>Research Subcontract</b> <b>Attachment 2A</b> <b>Subcontract No. <u>24088210</u></b>		
<b>Prime Contractor Contacts</b>		
Name: <b>University of Central Florida Research Foundation, Inc.</b>		
Address: 12201 Research Parkway, Suite 501		
City: Orlando	State: FL	Zip Code + 4: 32826-3246
Institution Type : 501(c)3 Non-profit Organization	Congressional District: FL-07	Registration current in SAM? Yes <u>X</u> No <u>  </u>
<b>Administrative Contact</b>		
Name: <b>Award Management Office</b>		
Address: 12201 Research Parkway, Suite 501		
City: Orlando	State: FL	Zip Code + 4: 32826-3246
Telephone: 407.823.1879	Fax: 407.823.3299	
E-Mail: <a href="mailto:osp@ucf.edu">osp@ucf.edu</a>		
<b>Principal Investigator</b>		
Name: <b>Leonid Chernyak</b>		
Address: 4111 Libra Dr.		
City: Orlando	State: FL	Zip Code + 4: 32816-2385
Telephone: 407.924.2933	Fax:	
E-Mail: <a href="mailto:Leonid.Chernyak@ucf.edu">Leonid.Chernyak@ucf.edu</a>		
<b>Financial Contact</b>		
Name: <b>UCF Finance and Accounting</b>		
Address: 12424 Research Parkway, Suite 300		
City: Orlando	State: FL	Zip Code + 4: 32826-3249
Telephone: 407.882.1000	Fax: 407.882.1102	
E-Mail: <a href="mailto:subvendor@ucf.edu">subvendor@ucf.edu</a>		
Invoices Sent To: <a href="mailto:subvendor@ucf.edu">subvendor@ucf.edu</a>		
<b>Authorized Official</b>		
Name: <b>Tamera C. Mace</b>		
Address: 12201 Research Parkway, Suite 501		
City: Orlando	State: FL	Zip Code + 4: 32826-3246
Telephone: 407.823.2806	Fax:	
E-Mail: <a href="mailto:subawards@ucf.edu">subawards@ucf.edu</a>		



Research Subcontract Attachment 2B Subcontract No. <u>24088210</u>		
Subcontractor Contacts		
Name: <b>Vasyl Stefanyk Precarpathian National University</b>		
Address: Shevchenko Str. 57		
City: Ivano-Frankivsk	Country: Ukraine	Zip Code + 4: 76018
Institution Type : 501(c)3 Non-profit Organization	Congressional District: n/a	Registration current in SAM.gov? Yes ___ No <u>X</u>
EIN: n/a	DUNS: 36-376-6352	Parent DUNS:
Did Subcontractor's gross income, from all sources, in the previous tax year exceed \$300,000? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Is the Performance Site the same address as set forth above? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
If no, is the Performance Site the same as the PI address set forth below? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If you answered "no" to any of the above questions, please complete "Attachment 2B, Page 2," below.		
Is Subcontractor exempt from reporting compensation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, complete "Attachment 2B, Page 2," below.		
<b>Administrative Contact</b>		
Name: <b>Valentyna Yakubiv</b>		
Address: Shevchenko Str. 57		
City: Ivano-Frankivsk	State: Ukraine	Zip Code: 76018
Telephone: +380342596055	Fax: +380342531574	
E-Mail: <a href="mailto:valentyna.yakubiv@pnu.edu.ua">valentyna.yakubiv@pnu.edu.ua</a>		
<b>Principal Investigator</b>		
Name: <b>Lyubomyr Nykyruy</b>		
Address: Shevchenko Str. 57		
City: Ivano-Frankivsk	State: Ukraine	Zip Code: 76018
Telephone: +380342596082	Fax: +380342531574	
E-Mail: <a href="mailto:lyubomyr.nykyruy@pnu.edu.ua">lyubomyr.nykyruy@pnu.edu.ua</a>		
<b>Financial Contact</b>		
Name: <b>Olha Hryhoriv</b>		
Address: Shevchenko Str. 57		
City: Ivano-Frankivsk	State: Ukraine	Zip Code: 76018
Telephone: +380342596032	Fax: +380342531574	
E-Mail: <a href="mailto:olha.hryhoriv@pnu.edu.ua">olha.hryhoriv@pnu.edu.ua</a>		
<b>Checks Sent To:</b>		
Name: <b>Olha Hryhoriv</b>		
Address: Shevchenko Str. 57		
City: Ivano-Frankivsk	State: Ukraine	Zip Code: 76018
Telephone: +380342596032	Fax: +380342531574	
E-Mail: <a href="mailto:olha.hryhoriv@pnu.edu.ua">olha.hryhoriv@pnu.edu.ua</a>		
<b>Authorized Official</b>		
Name: <b>Valentyna Yakubiv</b>		
Address: Shevchenko Str. 57		
City: Ivano-Frankivsk	State: Ukraine	Zip Code: 76018
Telephone: +380342596055	Fax: +380342531574	
E-Mail: <a href="mailto:valentyna.yakubiv@pnu.edu.ua">valentyna.yakubiv@pnu.edu.ua</a>		

<b>Research Subcontract</b> <b>Attachment 2B, Page 2</b> <b>Place of Performance &amp; Highest Compensated Officers</b> <b>Subcontract No. <u>24088210</u></b>		
Subcontractor Name: <b>Lyubomyr Nykyruy</b>		
Place of Performance:		
Name: <b>Vasyl Stefanyk Precarpathian National University</b>		
Address: <b>Shevchenko Str. 57</b>		
City: <b>Ivano-Frankivsk</b>	State: <b>Ukraine</b>	Zip Code: <b>76018</b>
Telephone: <b>+380342596082</b>		
E-Mail: <a href="mailto:lyubomyr.nykyruy@pnu.edu.ua">lyubomyr.nykyruy@pnu.edu.ua</a>	Congressional District: <b>n/a</b>	
<p>The names and total compensation of the five most highly compensated officers of Subcontractor must be listed if:</p> <p>(i) Subcontractor in the preceding fiscal year received:</p> <p style="margin-left: 40px;">(I) 80 percent or more of its annual gross revenues in Federal awards (federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements); AND</p> <p style="margin-left: 40px;">(II) \$25,000,000 or more in annual gross revenues from Federal awards; AND</p> <p>(ii) the public does not have access to information about the compensation of the senior executives of Subcontractor through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986.</p> <p>Is Subcontractor exempt from reporting executive compensation? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If no, complete the information below.</p>		
Officer 1 Name		
Officer 1 Compensation		
Officer 2 Name		
Officer 2 Compensation		
Officer 3 Name		
Officer 3 Compensation		
Officer 4 Name		
Officer 4 Compensation		
Officer 5 Name		
Officer 5 Compensation		

**Research Subcontract  
Attachment 3  
Subcontractor Statement of Work and Deliverables  
STATEMENT OF WORK**

**Project title: Radiation hard UV detectors against terrorist threats**

**Project subtitle: Physical Vapor Deposition of Polycrystalline GaN films**

**Principal investigators:**

L. Nykyruy, PhD, Prof. (theoretical investigation)

I. Horichok, Dr. Sci., Prof. (experimental investigation)

Institution: Vasyl Stefanyk Precarpathian National University, Shevchenko 57, 76-000, Ivano-Frankivsk, Ukraine

III-Nitrides films show promise to advance the next generation of power electronic devices due to a combination of tunable bandgap, high critical electric field, and high electron mobility [1].

For commercial large-scale applications, the metal-organic chemical vapor deposition (MOCVD) method is still the most widely used to grow GaN layers due to its throughput capabilities. However, MOCVD requires high growth temperature. Furthermore, CVD system requires the use of toxic gases.

In contrast to the MOCVD, molecular beam epitaxy (MBE) is physical vapor deposition (PVD) process, in which growth proceeds layer-by-layer.

Magnetron sputter epitaxy (MSE) is a more recent addition to PVD method that is based on the reactive sputtering process widely adopted in both engineering and semiconductor industries.

Comparison of MOCVD, MBE, and MSE for growth of GaN films shown in Table 1.

**Table 1.** Comparison of GaN film growth technology using metal–organic chemical vapor deposition (MOCVD), molecular beam epitaxy (MBE), and magnetron sputter epitaxy (MSE).

<b>MOCVD</b>	<b>MBE</b>	<b>MSE</b>
Chemical vapor deposition	Physical vapor deposition	Physical deposition
Toxic precursors require special handling	Metal and inert gases as precursors	Metal and inert gases as precursors
Up to atmospheric working pressure	Ultra-high vacuum. Base pressure is $< 1 \times 10^{-8}$ Torr. Operation is in $\sim 10^{-5}$ Torr range	Ultra-high vacuum. Base pressure is $< 1 \times 10^{-8}$ Torr. Operation is in $\sim 10^{-3}$ Torr range
Growth happens near thermodynamic equilibrium	Able to grow thermodynamically forbidden materials	Able to grow thermodynamically forbidden materials
Can produce interfaces with precision down to several nanometers	Can produce very sharp interfaces with monolayer precision	Can produce very sharp interfaces
Suitable for mass production	Mostly limited to lab research	Potential for very large-scale production



Growth at high temperature ( $> 1000\text{ }^{\circ}\text{C}$ ).	Growth at moderate temperature ( $\sim 800\text{ }^{\circ}\text{C}$ )	Growth at moderate temperature ( $\sim 700\text{ }^{\circ}\text{C}$ ). High-quality film growth at lower temperature is possible.
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**Task 1: Growth (December 1, 2020 – February 1, 2021)**

For preparation of GaN polycrystalline films a simple method based on PVD is suggested. Gallium will be used as a source for the fabrication of thin layers by evaporation on sapphire substrates held at temperatures from 100 to 300 K with  $\pm 1\text{ }^{\circ}\text{K}$  accuracy. The growth rate will be 0.2 nm/s. Grain size will be determined using atomic force microscopy (AFM). Following evaporation, Ga films will be treated in Nitrogen atmosphere at 320 K, thus creating a thin GaN layer ( $\sim 0.1\text{ }\mu\text{m}$ ). The temperature will then be increased up to 500 K during 1 hour.

**Task 2: Processing (February 1, 2021 – May 1, 2021)**

Au-Cr Ohmic contacts will be processed by thermal evaporation technique. The current-voltage characteristics will be used for contact characterization.

**Task 3: Characterization (May 1, 2021 – August 31, 2021)**

The Hall effect measurements will be carried out in the 80–300 K temperature range using the magnetic field of 0.2 T.

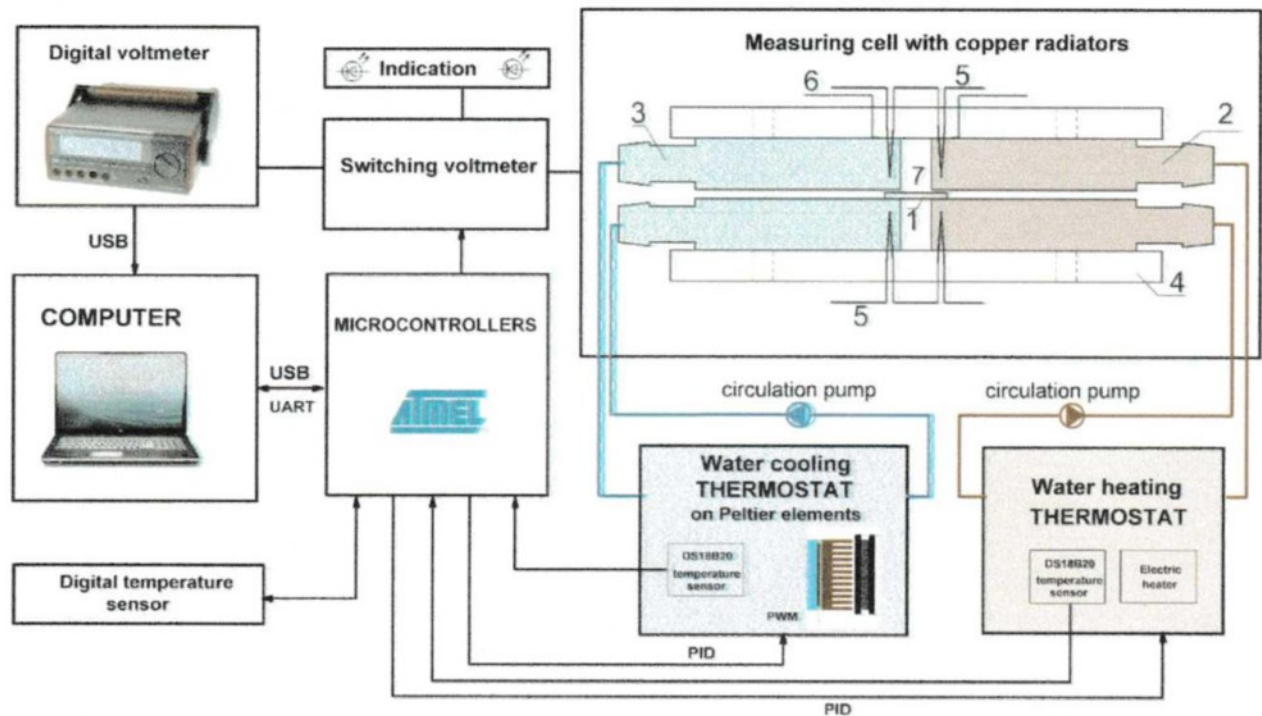
Seebeck coefficient of grown films will be measured in 80-300 K temperature range using a home-made setup described in [2]. The accuracy of temperature measurement will be 0.1-0.2 K. Seebeck coefficient uncertainty will be within 6 %.

Heat transfer investigation in GaN films will be performed using dynamic lattices method [3]. It is based on the effect sample excitation by two mutually interfering laser beams. As a result, the samples are characterized by a dynamic diffraction lattice, and the kinetics of the diffraction signal could be analyzed.

Finally, thermal diffusivity,  $\alpha$ , will be measured using the above-referenced method. The uncertainty of the thermal diffusivity measurement will be within 10 %. The description of the measurement approach can be found in ref. [2]. The total thermal conductivity will be calculated according to the following equation:

$$\kappa = \alpha \rho c_p \quad (1)$$

where  $\rho$  is the single crystal density, and  $c_p$  is the specific heat capacity.



**Fig. 1.** Schematics of the setup for measurements of transport properties.

## REFERENCES

- 1 H. Okumura, *Jpn. J. Appl. Phys.*, **45**, 7565 (2006).
2. B. Dzundza, L. Nykyruy, T. Parashchuk, E. Ivakin, Y. Yavorsky, L. Chernyak, Z. Dashevsky, *Physica B*, **588**, 412178 (2020).
3. E.V. Ivakin, I.G. Kisialiou, L.I. Nykyruy, Y.S. Yavorsky, *J. Semicond.*, **52**, 1691 (2018).

**Prof. Lyubomyr NYKYRUY**,  
Principal investigator,  
Vasyl Stefanyk Precarpathian National University,  
Ivano-Frankivsk, Ukraine

**Prof. Valentyna YAKUBIV**,  
Vice-Rector of Science  
of the Vasyl Stefanyk Precarpathian National University,  
Ivano-Frankivsk, Ukraine



## BUDGET

Project title: **Radiation hard UV detectors against terrorist threats**

Project subtitle: **Physical Vapor Deposition of Polycrystalline GaN films**

**Principal investigators:**

L. Nykyruiy, PhD, Prof.

Institution: **Vasyl Stefanyk Precarpathian National University,**

Shevchenko 57, 76018, Ivano-Frankivsk, Ukraine

Budget category	Total cost, USD
Equipment	4,000.00
Consumables and Spares	600.00
Stipend	5,400.00
<b>Total budget</b>	<b>10,000.00</b>

**Prof. Lyubomyr NYKYRUY,**

Principal investigator,

Vasyl Stefanyk Precarpathian National University,

Ivano-Frankivsk, Ukraine

**Prof. Valentyna YAKUBIV,**

Vice-Rector of Science

of the Vasyl Stefanyk Precarpathian National University

Ivano-Frankivsk, Ukraine





## BUDGET JUSTIFICATION

Project title: **Radiation hard UV detectors against terrorist threats**

Project subtitle: **Physical Vapor Deposition of Polycrystalline GaN films**

### Principal investigators:

L. Nykyruy, PhD, Prof.

Institution: **Vasyl Stefanyk Precarpathian National University,**

Shevchenko 57, 76018, Ivano-Frankivsk, Ukraine

### Equipment

Wire-cutting machine Altec-13009 (basic version; manufactured by Altec Corp., Chernivtsy, Ukraine)

Cost: **4000 USD**

### Stipends:

Young researcher	Task
1 researcher with a Ph.D x 6 month = <b>3 520 USD</b> Ostap MATKIVSKIY, PhD  *(under NATO rules: stipend for researcher with a Ph.D =500 EURO per month)	Will prepare the installation for GaN thin films deposition: - Modification of the PVD technology for deposition of films with optimal parameters for use in Radiation hard UV detectors; - Development of a theoretical model of deposition processes
1 researcher without a Ph.D x 4 month = <b>1 880 USD</b> Liliya KATANOVA, student  *(under NATO rules: stipend for researcher without a Ph.D =400 EURO per month)	- Control of parameters in the process of deposition; - Preparation of the substrate material

### Consumables and Spares

Items	Price for item	Total price, USD
Ga, 99.9999%	300 USD per 1 kg	<b>300</b>
Vacuum oil (DPO 704)	250 USD per 1 l	<b>250</b>
Substrate (sapphire ( 0001 ))	50 USD per 1 package (10 units)	<b>50</b>
<b>TOTAL</b>		<b>600</b>

**Prof. Lyubomyr NYKYRUY,**

Principal investigator,

Vasyl Stefanyk Precarpathian National University,

Ivano-Frankivsk, Ukraine

**Prof. Valentyna YAKUBIV,**

Vice-Rector of Science

of the Vasyl Stefanyk Precarpathian National University,

Ivano-Frankivsk, Ukraine



**Payment Schedule**

<b>Deliverable</b>	<b>Due Date</b>	<b>Payment</b>
Execution of Subcontract	<b>Upon Execution</b>	<b>\$3,000</b>
Task 1	<b>02/15/2021</b>	<b>\$2,334</b>
Task 2	<b>05/15/2021</b>	<b>\$2,333</b>
Task 3	<b>9/15/2021</b>	<b>\$2,333</b>

Research Subcontract  
Attachment 5  
Prime Contract  
Subcontract No. 24088210



EMERGING SECURITY CHALLENGES DIVISION  
ASSISTANT SECRETARY GENERAL

DIVISION DÉFIS DE SÉCURITÉ ÉMERGENTS  
LE SECRÉTAIRE GÉNÉRAL ADJOINT

SPS Contacts  
Dr. Claudio Palestini  
Mrs. Klavdija Kaliopé  
[sps.admin@hq.nato.int](mailto:sps.admin@hq.nato.int)

ep

PLEASE DO NOT SEPARATE PAGES

14 March, 2018  
ESC(2018)0083  
SPS.SFPP G5453)

Prof. Leonid Chernyak  
University of Central Florida Research Foundation, Inc.  
Physics Department  
4111 Libra Dr. 12201 Research Parkway Suite 501  
Orlando, FL 32816-2385 32826-3246  
USA

Dear Prof. Chernyak,

On behalf of the NATO Partnership and Cooperative Security Committee, I am pleased to inform you that, in the framework of the Science for Peace and Security (SPS) Programme, NATO has approved the project SPS G5453 - "Radiation Hard UV Detectors against Terrorist Threats" which you have proposed in collaboration with

Prof. Igor Lubomirsky, Weizmann Institute of Science, Rehovot, Israel

To signify acceptance of this grant, all project co-directors shall initial each page of this letter and sign the acceptance statement at the end. An authorized representative of each co-director's institution must also sign the acceptance statement. In order that the project may begin without delay, electronic copies signed by each co-director and his/her institutional representative will be accepted provisionally; the completed original document must be returned to the NPD and an electronic copy submitted to the SPS Office within three months of the date of this letter.

In order for funds to be released, an intellectual property rights (IPR) agreement among the co-directors and their institutions must be submitted to the SPS Office along with the completed award letter. If the co-directors deem that such an agreement is not necessary for this project, a statement to that effect signed by all co-directors and representatives of their institutions may be provided instead.

Upon receipt of all necessary documents and signatures, an initial grant of EUR 228,000.00 (TWO HUNDRED TWENTY-EIGHT THOUSAND EUROS) will be paid to your account at University of Central Florida. Research Foundation, Inc. ("UCFRF"), a Florida non-profit corporation and direct support organization acting as and instrumentality of the University of Central Florida. An overall project budget of 380,000.00 EUR has, in principle, been approved by NATO and additional grants may be made up to this amount subject to available budgetary credits and to satisfactory project progress and reporting, as described in the SPS Multi-Year Project Management Handbook (MYP Handbook).

This grant and any further grants made to this project are to be governed by the rules set out in the MYP Handbook, the financial rules of University of Central Florida as identified in the project plan, and any additional rules included in this letter. While project funds are granted to Prof. Chernyak through University of Central Florida they shall be used as described in the attached initial budget table, subject to modification as described in the MYP Handbook. (University of Central Florida shall be changed to UCFRF hereto.)

Specific Conditions

- In cases where the former Yugoslav Republic of Macedonia\* is mentioned in any SPS activity-related publication, brochure, website, twitter, etc., a footnote must always be given stating "Turkey recognises the Republic of Macedonia with its constitutional name".
- Please note that VAT should be covered from Project or other funds as the SPS Office is no longer able to issue VAT exemption certificates.

North Atlantic Treaty Organization - Organisation du Traité de l'Atlantique Nord  
Boulevard Léopold III - B-1110 Bruxelles - Belgique  
Tel. +32(0)2 707 4420 - Fax +32(0)2 707 2014



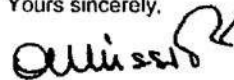
LC  
04/16/18

In order to begin the project promptly, a kickoff meeting must be scheduled among co-directors, in person or via teleconference, within 60 days of the receipt by the SPS Office of the required documents and countersigned letters. Please inform the SPS Office when this meeting has been scheduled as it will serve as the kickoff date for the project.

Correspondence and documents relating to this project should be sent to the SPS Office at [sps.admin@hq.nato.int](mailto:sps.admin@hq.nato.int); please include the SPS grant number G5453 in the subject line.

**All correspondence related to this grant must be addressed only to the SPS Project Contacts.**

Yours sincerely,



Dr. Antonio Missiroli

cc: All Co-Directors, as listed above.

APPROVAL OF PROJECT NATO ISEG.MD.SFPP G5453  
NATO MYP-RHD  
Grant Letter dated 14 March, 2018

NATO country Project Director and Partner country Project Director

I, Prof. Leonid Chernyak, NATO country Project Director (NPD), have read and accept the MYP Handbook and award letter for SPS Project G5453.

Signed:

NATO country Project Director (NPD)

Date: April 16, 2018



Leonid Chernyak

Head of the NPD's Institution

Date: 05/29/2018

Arlisia Potter



Signed: Tuesday, May 29, 2018

Legal Content Approved


SPS 15/22/18  
to 2018

I, Prof. Igor Lubomirsky, Partner country Project Director (PPD), have read and accept the have read and accept the MYP Handbook and award letter for SPS Project G5453.

Signed:

Partner country Project Director (PPD)

Date: 30/05/18



Digitally  
signed by  
Doron Amit  
ID\_032061368

Date:  
2018.05.31

09:32:54  
+03'00'

  
Dr. Doron Amit, Head  
Research Group and Projects Office  
Weizmann Institute of Science  
Rehovot 76100, Israel

Ben Natan  
Bosmat  
ID\_029560505

Ben Natan Bosmat  
ID\_029560505  
Date: 2018.05.31  
Time: 09:32:54  
+03'00'

Head of the PPD's Institution

Date: .....

Short Title	SPS Ref. No.	IPR Status
MYP I Radiation Hard Detectors	65453	To Do

### Proposed by SPS Office

Category	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Final	Total
Equipment	180,000	2,000	1,000			183,000
Training	8,000		8,000			16,000
Communication & Publication	2,000	2,000	2,000	1,000	1,000	8,000
Travel	19,000	19,000	19,000	21,000		78,000
Consumables	17,000	17,000	15,000	9,000	7,000	65,000
Other	1,000	7,000	5,000	5,000	2,000	20,000
Stipends	1,000	1,000	1,000	1,000	4,000	8,000
Project Management					2,000	2,000
Total	228,000	48,000	51,000	37,000	16,000	380,000

Category	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Final	Total
Chernyak / USA						
Equipment	90,000	2,000	1,000			93,000
Training	4,000		4,000			8,000
Communication & Publication	1,000	1,000	1,000		1,000	4,000
Travel	11,000	11,000	11,000	13,000		46,000
Consumables	7,000	7,000	5,000	4,000	2,000	25,000
Other	1,000	1,000	1,000	1,000		4,000
Stipends	1,000	1,000	1,000	1,000	4,000	8,000
Project Management					2,000	2,000
Subtotal Chernyak	115,000	23,000	24,000	19,000	9,000	190,000

Lubomirsky / Israel						
Equipment	90,000					90,000
Training	4,000		4,000			8,000
Communication & Publication	1,000	1,000	1,000	1,000		4,000
Travel	8,000	8,000	8,000	8,000		32,000
Consumables	10,000	10,000	10,000	5,000	5,000	40,000
Other		6,000	4,000	4,000	2,000	16,000
Stipends						
Subtotal Lubomirsky	113,000	25,000	27,000	18,000	7,000	190,000

LC  
04/16/18





EMERGING SECURITY CHALLENGES DIVISION  
DIVISION DES DÉFIS DE SÉCURITÉ ÉMERGENTS

**SPS CONTACTS**

Dr. Claudio Palestini  
Mrs. Klavdija Kaliopé  
[sps.admin@hq.nato.int](mailto:sps.admin@hq.nato.int)

16 September 2020  
ESC(SPS)(2020)0213

(MYP G5453)

Prof. Leonid Chernyak  
University of Central Florida Physics Department  
4111 Libra Dr.  
Orlando, FL 32816-2385  
USA

Dear Prof. Chernyak,

Further to your request, I agree to a 6 month extension of the project from 1 June 2021 until **1 December 2021** under the condition that no NATO SPS funds in addition to the overall amount estimated for the project are requested.

The MYP Detailed Budget will be revised to reflect the extension and Milestone/Final reporting deadlines.

Yours sincerely,

Dr. Deniz Beten  
Senior SPS & Partnership Cooperation Advisor

**Research Subcontract  
Attachment 6  
Prime Contract Terms and Conditions  
Subcontract No. 24088210**

Subrecipient is subject to the terms and conditions included below. Where appropriate, the following modifications are made to the specific terms herein:

Wherever the term "NATO" is used, "Prime Contractor" shall be substituted. Wherever the terms "SPS Contractor" are used, "Prime Contractor Authorized Official" shall be substituted. Wherever the terms "NATO Country Project Director (NPD)" are used, "Prime Contractor Principal Investigator" shall be substituted. Wherever the terms "Partner Country Project Director (PPD)" are used, "Subcontractor Principal Investigator" shall be substituted. Wherever the terms "Grant Recipient" are used, "Subcontractor" shall be substituted. Wherever the term "Grant" is used, "Subcontract" shall be substituted.

**TERMS AND CONDITIONS INCORPORATED BY REFERENCE**



Emerging Security Challenges Division

Science for Peace and Security Programme

Multi-Year Projects Handbook

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## 1. Introduction

The NATO Science for Peace and Security Programme (SPS) seeks to enhance cooperation and dialogue between NATO and partner nations through civil science and innovation. The SPS Programme funds activities relevant to NATO's strategic objectives which address SPS Key Priorities. SPS offers grants for collaborative research and development projects, workshops, institutes, and training involving scientists and experts from NATO nations and partner countries. This Handbook describes the financial and administrative procedures for the management of the first of these, **SPS Multi-Year Projects (MYP)**, and sets out the general terms and conditions governing grants made under this program. Additional procedures, terms, and conditions may also be set out in the Grant Letter or in the approved Project Plan. The current version of this Handbook and its annexes are available on the NATO SPS website: [www.nato.int/science](http://www.nato.int/science).

Grants under the SPS Programme are provided at the sole discretion of NATO. The most recent revision of this Handbook and its annexes, along with the signed Grant Letter, and any documents annexed to it or incorporated in it by reference, constitute the entire terms and conditions of grants under the SPS Programme. In the event of inconsistencies among these documents, the Grant Letter and its annexes take priority over this Handbook and its annexes.

Questions about SPS and Multi-Year Projects in general should be addressed to [sps.info@hq.nato.int](mailto:sps.info@hq.nato.int). Completed applications should be sent to [sps.applications@hq.nato.int](mailto:sps.applications@hq.nato.int). Queries about ongoing projects should be directed to the responsible SPS Advisor.

### 1.1. What Do SPS Multi-Year Project Grants Offer?

SPS MYP grants support collaborative applied research and development projects which must:

- ★ **address one or more SPS Key Priorities** (See SPS Key Priorities Annex)
- ★ **demonstrate a clear link to security**

and show evidence of:

- high quality research and development
- clear and realistic objectives
- solid milestones and deliverables
- substantial cooperation among researchers from NATO nations and partner countries
- collaboration between researchers and potential end-users of the project results\*
- participation of young scientists

SPS provides funding for project-specific costs including:

- equipment and consumables

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\* Depending on the nature of the project, end users could be (but are not limited to) government ministries, state organisations or regional authorities within a participating country or private, commercial and/or industrial companies.



- project-related training and travel including hosting or attending conferences and seminars
- communications both to the scientific community and to the public
- the project management expenses of the NATO-country project director up to 10% of the overall budget
- limited stipends for young researchers

but **not including** salaries or overhead. See section 3.4 for further details.

Multi-Year Projects last for 18–36 months.

## 1.2. Who Can Apply?

SPS Multi-Year Projects are collaborations between experts in NATO nations and in NATO partner countries. Applications must thus be developed and submitted jointly by one or more applicants residing and working in NATO nations, and one or more residing and working in NATO partner countries. The principal applicants, termed *project co-director*, are each allocated his or her own budget in the MYP application. In general, an application should have no more than one co-director per institution. Each co-director takes responsibility for the planning and progress of work performed at his or her institution, and all work together to ensure the success of the overall project. Other *project participants* are not assigned their own budget and are not considered co-directors, for example students or post-doctoral researchers, further researchers at a given institute, etc.

The primary co-director from a NATO country and the primary co-director from a partner country are referred to respectively as the NATO country Project Director (NPD) and Partner country Project Director (PPD); each project will have one NPD and one PPD. In addition to overseeing work at their own institutions, the NPD and the PPD have joint responsibility and authority for the overall technical management of the project including project reporting as described below. The NPD and his or her institution will receive and manage all project funds, as described below, and the NPD retains ultimate responsibility and accountability for financial aspects of the project.

All applicants must be affiliated with a government, academic, or other non-profit institution. For-profit private companies are not eligible for SPS funding although their participation as end-users is encouraged.

## 2. The Life of a Project

### 2.1. Application and Evaluation

#### 2.1.1. Project Plan

Multi-Year Projects begin as a Project Plan developed collaboratively by the prospective co-directors. The Project Plan describes the purpose and objectives of the project in detail. It describes the management and organization of the project and the responsibilities of key personnel, includes a detailed work plan and budget, criteria for success, an intellectual property rights (IPR) agreement among the participants and their institutions\*, CVs of all co-directors, and written commitments from the identified *end-users*, including a statement of their interest in the project. In addition, the Project Plan will establish milestones to be used as the basis for progress reporting and payments. A template can be found in annex along with further instructions, and should be submitted electronically as described in that annex.

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\* or a waiver, agreed by all participants and their institutions, stating that an IPR agreement is not necessary; NATO makes no claim to intellectual property developed under MYP grants.

Project Plans may be submitted at any time, but are generally reviewed in two or three cycles per year. NATO publishes deadlines for each round of evaluation on the [SPS website](#). Please check this website regularly for changes to deadlines and application materials.

### **2.1.2. Peer-Review**

Project Plans are reviewed by the Independent Scientific Evaluation Group (ISEG), a group of scientists from NATO countries nominated by, but not representing their respective governments. After review, the ISEG make their recommendations to NATO.

## **2.2. Approval and Award**

Projects recommended by the ISEG are considered by the NATO Allies who make the final decision to fund or reject. Should a proposal be approved by the NATO Allies, a Grant Letter, advising the co-directors of the decision and detailing the conditions of the award both financial and technical is issued to the co-directors from the SPS Office\*.

## **2.3. Acceptance and Kickoff**

An SPS Project is formally established upon the SPS's receipt of the Grant Letter, signed by all co-directors and an authorized representative of the NPD's institution. The signed Grant Letter, its appendices and documents included in it by reference forms, along with this handbook, the contract between NATO on the one side and the co-directors and their institutions on the other. At this point, in most instances an initial payment for the first six months of project work will be transferred to the NPD's institutional account.

The co-directors should plan a kick-off meeting to be held either in person or via teleconference no more than 60 days after the final signed letter is received by the SPS Office. The SPS Office must be informed of the date of this meeting which will serve as the start date for the project.

## **2.4. Reporting and Assessment**

A reporting schedule linked to technical progress will be established in the Project Plan for each project. Generally, a financial and technical report will be due for Milestone One within six months from the start date. Further progress reports will be linked to technical milestones, as defined in the Project Plan, with at least one milestone (and thus one progress report) per year. Thus, the minimal schedule for a three-year project would consist of a Milestone One report six months following the kick-off, technical milestone-linked progress reports around 18 and 30 months, and a final report at 36 months. Instructions and templates for technical and financial reports are in annex.

In addition to formal progress reports, co-directors shall keep the SPS Office informed regularly, and upon request of the SPS Office, with timely informal updates on project events and milestones: project meetings, purchase and installation of significant equipment, project-related conferences, publication of project-related articles or patents, and so on.

Both informal updates and progress reports shall include high quality multimedia content in order to allow NATO to promote the project to the public. Up to €5,000 for the production of this content, for example a project website, professional photography and video production, or project related exhibitions or educational activities, may be included in the project budget. All publications, presentations, and other externally distributed materials stemming from the MYP grant shall comply with SPS Visual Identity

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\* Formally the *Science for Peace and Security Programme Management and Budget unit in the NATO Emerging Securities Challenges Division*



Guidelines (provided to project co-directors) and shall credit NATO support with the following or a substantially similar sentence: This research was sponsored [in part] by the NATO Science for Peace and Security Programme under grant [XXXXXX].

The financial and technical progress of each project will be overseen by, the SPS Advisor, who will be the co-directors' primary contact in the SPS Office. In addition, the SPS Office will, at its discretion, appoint an external evaluator with expertise in the project's technical area. Both the SPS Advisor and the external evaluator will review progress reports and work with co-directors to ensure that the project remains on target. A mid-term assessment including, whenever feasible, a site visit by the SPS advisor and/or external evaluator will be conducted following the most suitable milestone as agreed by the co-directors and the SPS Office.

Should unforeseen circumstances require changes to a project already underway, the SPS Advisor will work with the co-directors to ensure the smoothest possible continuation. Changes to a co-director require the agreement of all co-directors as well as the SPS Office. Changes to the institution of a co-director require the official agreement of both the old and new institutions as well as of the SPS Office.

## 2.5. Project Close-out

After the technical activities of a project have been completed, the co-directors shall prepare a final report detailing project activities, technical or scientific progress, and the implementation or planned implementation of the results. Instructions and a template for final reports are in annex and must be submitted along with a final financial report including remaining justifying documents and an account balance statement prepared by the NPD's institution. A final project evaluation will be scheduled, including a site visit by the SPS advisor and/or external evaluator whenever feasible. The payment of the final instalment of the SPS grant is contingent on the satisfactory completion of the final report and evaluation.

## 3. Finance

Grantees will manage funds in accordance with the budget and other conditions of the SPS Grant Letter and with the financial regulations in place at the NATO Project Director's institution. Applicants are required to supply a copy of the relevant financial regulations with the Project Plan. These regulations must comply with fundamental procurement principles such as competition, transparency, fairness, integrity, etc., as specified in the WTO Government Procurement Agreement. Furthermore, they must contain standards of conduct governing staff engaged in the award and management of contracts under the grant. These standards must include provisions to avoid real or apparent conflicts of interest and to prohibit the acceptance and solicitation of favours or gratuities from potential or actual recipients of grant funds (i.e. vendors and service providers). Grantees must also inform NATO promptly of any changes to the applicable financial rules as they are made.

Should NATO, in its sole discretion, require any additional conditions or modifications to these institutional rules, they will be discussed with applicants and included in the Grant Letter or communicated to co-directors in writing.

In the event of any discrepancy between the rules imposed by NATO (whether by way of this Handbook, a Grant Letter, or otherwise) and the financial rules of the institution, the former take precedence.

NATO funds must be used only for **direct project-specific costs** reflected in the project budget. Any misuse of funds or material non-compliance with grant conditions may lead to the immediate termination of the grant and to legal action.



### 3.1. Budget

Among the final stages in the approval of a proposed Multi-Year Project is the negotiation of a *project budget* between co-directors and the SPS Advisor on the basis of the budget proposed in the Project Plan. This budget consists of both the fixed *budget ceiling* and a *schedule of payments* linked to project reporting. The agreed budget will be set out in the Grant Letter and will form part of the terms and conditions of the grant.

Modifications to the project budget, within budget ceiling, are possible in the course of the project. Changes which, alone or together, are less than 5% of the overall budget must be approved by the NPD who must also promptly notify the SPS Office. Larger changes must be recommended by all co-directors and approved in advance by the SPS Office. All approved changes, will be incorporated into the project budget, and subsequent reporting shall reflect them.

While there are no hard limits the budget of Multi-Year Projects, typical three-year projects are in the €150,000–€300,000 range. If your project would require more than €400,000, please send us a one-page abstract of your proposal with an estimated budget so that we can evaluate whether such a project fits in our overall portfolio before developing a full application.

### 3.2. Payments

Once the Grant Letter is signed and returned to NATO, NATO will transfer the initial payment to the NPD's institution where it must be held, as with all project funds, in a **separate account or sub-account established exclusively for this project**; NATO funds shall not be mingled with funds from any other source.

The NPD and his/her institution are responsible for making payments from these advances both for his/her own expenses and for those of other co-directors according to the project budget. The NPD also has responsibility for maintaining proper documentation and justification for all expenses, including those of other co-directors, in accordance with his or her institution's financial rules. The NPD's institution shall withhold or withdraw approval of any expenditure that contravenes a term of NATO's requirements as set out in the Grant Letter, this Handbook, or any other written communication, or the institution's own financial policies or controls. The NPD's institution shall consult with the SPS Advisor whenever the Institution is uncertain as to NATO's financial requirements.

### 3.3. Documentation

All payments from the project account must be recorded on the financial record form (FRF) in annex. The FRF must be kept up to date and ready for inspection by the SPS Advisor at any time. In addition, justifying documentation must be retained for expenses as required by the financial standards of the NPD's institution. Copies of these justifying documents in paper or electronic format must be submitted to the SPS Office, along with the FRF as part of the required reporting. These documents should be grouped by expense and each group labelled with the corresponding entry number from the FRF. Original justifying documents should be retained by each co-director, and approved copies by the NPD, for at least five years after the official closure of the project.

Each co-director is accountable for instruments, tools, and other non-expendable items purchased in whole or in part with NATO funds. For equipment with an initial value of over €2,500, co-directors must, on delivery, affix a unique NATO SPS identification label (to be provided by the SPS Office) to the instrument itself if feasible (and if not to an associated item, for example the user's manual), and inform the NPD who will enter the details in the property tab in the budget spreadsheet. The property inventory may be audited at any time by NATO officials, their representative, or local authorities. If item of property

has been damaged, destroyed, or cannot be located, the circumstances of the loss must be immediately reported to the NPD and the SPS Office. Such loss must be indicated and details given in the property inventory log.

Following the achievement of each reporting milestone laid out in the Project Plan, the NPD shall send a technical and financial progress report to the SPS Advisor, including updated spending projections for the remainder of the project and any proposed modifications to the budget, and an updated property log. Templates for these reports are in annex. The co-directors and SPS Advisor will then work together to agree a revised budget and schedule of payments to reflect actual spending to date and projected future spending. Final decisions rest with NATO. Provided that project progress and reporting are satisfactory to SPS, and subject to available budgetary credits, NATO will make a subsequent payment in accordance with this updated schedule. If satisfactory progress is not made, the SPS Office reserves the right to require or impose modifications to the budget or the project, or to terminate the project.

### 3.4. Generally Allowable Expenses

Subject to the approved budget set out in the Grant Letter, the following expenses are generally allowable:

#### *Equipment, Computers, and Consumables*

- purchase of *project-specific* equipment, computers, consumables, and spare parts, including costs necessary for shipment and installation
- repair and maintenance of project-specific equipment

Major equipment (>€2,500) must, where possible, be marked with inventory stickers to be provided by the SPS Office, acknowledging the SPS Programme as the source of funds.

#### *Travel*

- travel and accommodation for project participants for project meetings and consultation
- travel and accommodation for project participants for project-relevant conferences, workshops, and seminars, including conference fees

#### *Training*

- training expenses for project participants including necessary travel and accommodation; training may include, but is not limited to, instruction on new equipment or techniques with the manufacturer or in the laboratory of another project participant, or a seminar/institute organized within the framework of the project to train multiple project participants simultaneously

#### *Publications and Communication*

- the purchase of journals and books necessary for the project
- expenses for publication of scientific results (e.g. page charges)
- up to €1,000 per patent for the filing of patents generated in the course of the project
- up to €5,000 for dissemination of the results to a broader public in both NATO and partner countries involved in the project, for example for
  - hiring professional photographers to take high-resolution pictures;
  - production of promotional and/or informational video clips to present the aims, ongoing work, equipment and exercises of the project to a larger audience;
  - creating a public project website containing all relevant information as well as regular updates about the project;



- organizing and participating in public exhibitions (local/national media should be invited to these events where possible), etc.

#### Stipends

- stipends for a maximum of five young researchers per co-director from eligible partner countries and two per co-director from NATO countries as detailed in section 3.6

#### Other

- the NPD's financial management expenses not to exceed 10% of the overall project budget

### 3.5. Ineligible expenses

The following expenses are ineligible under the SPS programme *except* as part of the NPD's financial management expenses which may be used for any project-related purpose:

- salaries or related benefits
- overhead or general administrative expenses including but not limited to construction, rental or use of buildings, depreciation of equipment already available, maintenance of premises, vehicle, or consumables such as electricity and heating oil
- office equipment and supplies such as copy machines, fax machines, etc.
- general language or computer courses

### 3.6. Stipends

Stipends are intended to supplement the income of young researchers (under 40 years old at the date of award) involved in SPS projects in NATO and eligible partner countries (see Eligible Countries Annex). As such, they may be used to provide additional salary, fellowships, scholarships, etc., provided that the full amount of the stipend is paid to the stipend recipient. The SPS project should represent the research focus for all stipend recipients. A CV (on the template in annex) must be submitted to the SPS Advisor for each potential stipend recipient, along with a description of his or her role in the project before he or she can be paid any stipend from NATO funds. The SPS Advisor must approve each potential stipend recipient before stipend payments may be made. Maximum stipends for young scientists are:

- €400/month for researchers without a Ph.D., including Ph.D. students
- €500/month for researchers with a Ph.D

An SPS project will support up to two stipend recipients per co-director in NATO countries and up to five per co-director in eligible partner countries. Co-directors may not themselves receive SPS stipends.

Following approval of a proposed stipend recipient by the SPS Office, stipends should be paid following each work period, but at least monthly. Stipends may be paid by the NPD either into the institutional account of the supervising co-director or, preferably, directly into the personal account of the stipend recipient him/herself. Stipends must never be paid to a co-director's personal account. A payslip, receipt signed by the stipend recipient, or equivalent documentation confirming payment of SPS funds to the recipient, is required for each payment and should be retained and submitted as with other justifying documents.

## 4. Inspection and Audit

Grant recipients shall allow NATO representatives or its authorized agents access to their premises and facilities to carry out monitoring reviews and compliance audits, provide them with access to all accounts, records and other information relating to a project, and respond fully and accurately to any inquiries



NATO may make for the purpose of verifying adherence to the terms and conditions of the grant or NATO requirements.

The financial records of the project, including an updated Financial Record Form (FRF) and justifying documents must be made available to the SPS Office upon request. A summary consisting of the FRF and an account statement from the NPD's institution shall be made available within one week of the Office's request, while a reasonable delay, not to exceed four weeks, will be accorded for justifying documents.

Furthermore, grant recipients shall

- (a) provide in a timely manner any information about the grant that NATO reasonably requests;
- (b) contribute to the monitoring, review and evaluation of NATO's granting programmes by participating in mid-term reviews, evaluation studies, surveys, workshops, audits and other activities organized for the purpose of collecting information to assess progress and results;
- (c) make their students, researchers, and staff available to participate in the monitoring, review and evaluation of NATO's programmes, policies and processes.

## 5. Legal Conditions

Grants under the SPS Programme are unilateral grants, made at the sole discretion of NATO. NATO may decline to make any grant or to withhold any grant payment at its sole discretion, in whole or in part.

Without limiting the generality of the foregoing, in the event of any default by a Grant Recipient, or if a Grant Recipient fails to comply with any of the terms and conditions set out in the Handbook, its annexes or the Grant Letter and its annexes, other written communications from NATO, or the financial regulations in place at the NPD's institution, NATO may at its sole discretion suspend (whether in whole or in part) the grant and the payment of any monies, or may terminate the grant. In such circumstance, NATO may at its sole discretion require repayment of some or all unexpended monies, or expended monies, and Grant Recipients are jointly and severally liable for repayment of such monies.

## 6. Annexes

- SPS Key Priorities
- Eligible countries and SPS glossary
- Project Plan instructions
- Project Plan template
- Project budget and financial record form
- CV template for proposed stipend recipients
- Sample Intellectual Property Rights agreement
- Progress report template
- Final report template

Research Subcontract  
Attachment 7  
Intellectual Property Rights Agreement  
Subcontract No. \_24088210

**Intellectual Property Rights Agreement (or waiver)**

*please include the IPR agreement (or a waiver) here*



Emerging Security Challenges Division  
Science for Peace and Security Programme

**PROJECT:** Radiation and Electron Injection in Gallium Oxide for Deep-UV Detection

**SPS PROJECT NUMBER:** G5748

THIS AGREEMENT is made effective on the date of last signature "Effective Date"

**BETWEEN**

A "University of Central Florida Research Foundation, Inc.", a non-profit direct support organization acting as an instrumentality of the University of Central Florida Board of Trustees ("UCF"), whose address is 12201 Research Parkway, Suite 501, Orlando, Florida 32826

B "Vasyl Stefanyk Precarpathian National University", a non-profit, public University located at Shevchenko Str. 57, Ivano-Frankivsk, 76018, Ukraine

"A" hereinafter to be called UCFRF, "B" hereinafter to be called PNU, and collectively to be called the "Parties" for the purpose of the Agreement only. Any statutory or other implication from the use of the term "Party" is hereby expressly excluded. In the event of any conflict related to Intellectual Property terms between this Agreement and the Research Subcontract Agreement, then the terms of this Agreement shall prevail.

**WHEREAS**

- (a) The Parties have expertise in the field of semiconductor materials and devices and wish to undertake joint research and exploitation of results in this field.
- (b) This project will benefit from financial support through the NATO Science for Peace and Security (SPS) Programme, as further described within the "award letter" attached to this agreement as Appendix A and constitutes an integral part thereof.
- (c) NATO wishes the results of the research undertaken to be applied to the benefit of the Parties, and waives any claim to ownership of Intellectual Property Rights deriving from such research as well as any income resulting from the exploitation of said Intellectual Property Rights.

**IT IS AGREED** as follows:

**1. INTELLECTUAL PROPERTY RIGHTS**

**1.1 Definitions**

The following definitions apply in this Agreement:

"*Intellectual Property*" includes inventions (whether patentable or not), patents, patent applications, registered designs and applications thereof, copyright material including computer software, and technical information.

"*Foreground Intellectual Property*" includes Intellectual Property arising from the research and development undertaken within this project (the "Project"), solely within the specific research

group involved in the Project, after the Effective Date of this agreement whether generated by one Party or two or more Parties jointly.

*"Background Intellectual Property"* includes Intellectual Property deemed to be relevant to the project and already owned by the Parties up until and through the Effective Date of this agreement. Background IP listed in Appendix B, attached hereto, shall be deemed to be included in the project ("Included Background IP"), while Background IP not listed in Appendix B, attached hereto, is explicitly excluded from the above definition, from the scope of the Project and from any access rights of the Parties.

*"The Research Program"* shall mean the research plan submitted to NATO by the Parties, as approved by the NATO Science for Peace and Security (SPS) Programme Office.

*"The Project"* shall mean the joint research project conducted by the Parties, according to the Research Program.

*"The Project Period"* shall mean the period in which the Parties will perform the project..

*"Project Completion Date"* shall mean the date of completion of the research and development activities under this project as defined and determined by the NATO SPS Projects Office.

The *"IPR Committee"* is a group comprising a representative from each of the Parties as outlined below:

UCFRF: Office of Technology Transfer Licensing Associate  
University of Central Florida Research Foundation Authorized Signatory  
NATO Project Director  
PNU: Research & Development Department  
Vasyl Stefanyk Precarpathian National University  
Partner country Project Director

## 1.2 Ownership and Access Rights

### 1.2.1. Foreground Intellectual Property shall be owned:

- (a) Solely by the Party who generated the Foreground Intellectual Property or engaged or employed the person or persons who made or conceived the Intellectual Property determined by U.S. patent and/or copyright law. The Party who owns the Foreground IP retains all rights to file and prosecute patent applications and to process the commercial exploitation of any and all of its owned Foreground IP, and,
- (b) Jointly by the Parties who generated the Intellectual Property or engaged or employed the person or persons who made or conceived the Foreground Intellectual Property. In such case, the Parties concerned shall jointly apply to obtain and/or maintain the relevant intellectual property rights and shall strive to set up amongst themselves, in good faith, through the representative of the offices of technology transfer or their equivalent, a co-ownership agreement in order to do so. The co-ownership agreement shall specify the allocation of expenses and royalties in connection with the jointly owned Foreground IP, and the share of each of the Parties in its development.

### 1.2.2. Background Intellectual Property specified in the Appendix B shall be made freely available to all the Parties for internal, non-commercial use (to the extent such rights are available) that is solely for the purpose and for the duration of the research and development activities of the project.

### 1.2.3 Participation in this project shall not itself affect any rights of any Party to Foreground Intellectual Property or Background Intellectual Property except as specifically mentioned herein.



## 2. EXPLOITATION

### 2.1 Foreground Intellectual Property

The Party or Parties shall, upon written request, grant the other a royalty-bearing license on fair and reasonable terms, to use any Foreground Intellectual Property that is required for the exploitation of the results of the Project.

In this context, the term "Required" shall mean that the commercial exploitation of the results would be technically impossible without the license to the *Foreground IP*.

Each Party shall retain a royalty free, non-transferable, non-exclusive license, to use Foreground Intellectual Property for its own internal, academic, non-commercial research, and teaching purposes.

### 2.2 Background Intellectual Property

2.2.1 Each Party, on request, shall grant during the Project Period, but prior to the termination or expiration of this Agreement, the other Party(ies) the right to receive a royalty-bearing license, to the extent such license is available and not subject to third party rights, on fair and reasonable terms, to use any Background Intellectual Property that is required for the exploitation of the Foreground Intellectual Property that such Party owns, solely or jointly, or has a license to use.

In this context the term "Required" shall mean that the commercial exploitation of the Foreground IP would be technically impossible without the license to the Background IP.

## 3. INTELLECTUAL PROPERTY PROSECUTION AND ENFORCEMENT

3.1 Each Party shall on a regular basis report, under confidence, disclosure(s) of Foreground Intellectual Property to the IPR Committee and to the other Party. Decisions on the protection, filing and prosecution of solely owned Foreground Intellectual Property lies with the owner of the Foreground Intellectual Property. The decisions on the protection, filing and prosecution of jointly owned Foreground Intellectual Property shall be determined jointly by the Parties.

3.2 Any Party shall promptly inform the other Party(ies) and the IPR Committee of any potential infringement of the Foreground Intellectual Property of which it becomes aware. The sole or joint owner(s) of the Foreground Intellectual Property that is the subject of the potential infringement shall solely or jointly, in accordance with the ownership, decide on any enforcement action and inform the IPR Committee accordingly.

3.3 In principle, each Party shall meet the costs of protecting its solely owned Foreground Intellectual Property, including its prosecution and enforcement. The cost sharing of joint Foreground Intellectual Property prosecution and enforcement shall be negotiated and agreed to in writing by the Parties under separate co-ownership agreement.

## 4. INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY

Any Party shall promptly inform the other Party(ies) and the IPR Committee of any evidence of infringement of a third party Intellectual Property by Foreground Intellectual Property. The IPR Committee shall inform the SPS Programme Office immediately when evidence of the potential infringement of Third party Intellectual Property is discovered. The IPR Committee will propose to the NATO SPS Projects Office potential solutions in order to try to avoid conflict with such third party.

## 5. CONFIDENTIALITY

5.1 PNU understands and agrees that UCFRF does not have any employees and that all personnel performing under this Agreement are employees or agents of UCF. As a result and notwithstanding anything to the contrary hereunder, UCFRF shall be able to disclose confidential information, in accordance with this Article 5, to employees of UCF who have a

need to know the confidential information in order to perform the Project and collaborate as set forth herein.

5.2 Each Party undertakes to keep confidential and shall not use except for the purposes of this Agreement or permitted by this Agreement:

- (a) All information concerning the Project which has been disclosed to a Party/Parties in writing that is marked as confidential or when disclosed orally has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within 15 calendar days from oral disclosure at the latest as confidential information by the disclosing party;
- (b) All information concerning the business affairs of any other Party that is marked as confidential;
- (c) The non-published Foreground Intellectual Property of the research and development as well as non-published Included Background IP, except as required by applicable Intellectual Property prosecution procedures.

5.2 The foregoing restrictions shall not apply to information:

- (a) Accessible to the public at the time of disclosure, or which subsequently becomes accessible through no fault of the recipient;
- (b) In the possession of the recipient at the time of disclosure, or is received by the recipient from a third party who is not under any obligation to keep such information confidential;  
or

Which was independently developed by the recipient Party, without reference to the confidential information, as shown by recipient Party's written records.

And while the restrictions will apply, it shall not be a breach of confidentiality if the information is:

- (e) Disclosed under operation of law, regulation, or in response to a judicial, administrative or legislative order, but the receiving Party shall, to the extent permitted by law, first notify the disclosing Party and comply with the disclosing party's reasonable instructions to protect the confidentiality of the information; or
- (f) Disclosed by receiving Party with disclosing Party's prior written approval.

5.3 Divulgence (including publication) of Foreground Intellectual Property shall only be undertaken following receipt of a copy of the intended divulgence by the IPR Committee. Parties will have a period of three months from receipt of a copy of the intended divulgence by the IPR Committee to present their objection to divulgence and file for patent protection, as relevant. Thereafter, the Parties wishing to divulge may proceed.

## 6. BREACH OF AGREEMENT

6.1 If one Party breaches this Agreement and the breach is not cured within 30 days of written notice of the breach from the non-breaching Party(ies), the non-breaching Party(ies) may terminate this Agreement.

6.2 Upon termination pursuant to 6.1:

- (a) The Party(ies) shall be free to exploit the joint Foreground Intellectual Property in accordance with the terms of this Agreement, unless otherwise agreed to by the Parties in an executed co-ownership agreement; and,
- (b) Right(s) to exploit the Background Intellectual Property of the breaching Party will be granted by the breaching Party to the non-breaching Party(ies) according to 2.2.1 shall remain, taking into consideration prior commitments.

## 7. MEDIATION AND ARBITRATION

7.1. Any of the Parties may initiate a mediation utilizing a mediator mutually agreed upon by the Parties to assist them in resolving any issue arising from this Agreement which has not been resolved by the IPR Committee; this mediation shall be done by a mediator nominated by the NATO SPS Projects Office.

7.2. If the mediation is not successful in resolving the issue, any Party may pursue any or all available legal remedies.

## 8. LAW

This Agreement shall be governed by the applicable state and federal laws of United States.

Nothing in this Agreement is intended nor shall be interpreted as a waiver of applicable sovereign immunity of any Party.

## 9. IPR COMMITTEE

9.1 All decisions of the IPR Committee shall be unanimous. In case of non-unanimity, the mediation procedure of Article 7.1 may be initiated by any of the Parties.

9.2 The IPR Committee has the competence to advise and recommend to the owner(s) of the Intellectual Property Rights Foreground Intellectual Property a non-binding strategy for the Parties regarding the protection of Foreground Intellectual Property, including:

- (a) Recommendations regarding the divulgation (including publication) of any information resulting from the project, to the extent provided pursuant to Article 5.3;
- (b) Recommendation regarding actions to be taken, including settlements, in the event of infringement of the joint Foreground Intellectual Property, to the extent provided pursuant to Article 3 and upon specific written authorization of each joint-owner;
- (c) Recommendations regarding actions to be taken, including settlements, in the event of infringement of third party rights, to the extent provided pursuant to Article 4 and upon specific written authorization of each joint-owner;
- (d) Monitoring and decisions with respect to all Intellectual Property aspects of the project, as defined and agreed upon in writing between Parties.

9.3 The IPR Committee shall report on Intellectual Property issues to the NATO SPS Projects Office every six months.

## 10. GENERAL

10.1 Each Party undertakes to the others to take all steps that are necessary to ensure compliance with the provisions of this Agreement by its employees, agents and researchers.

10.2 The terms of Articles 1.2.1 and 1.2.3, Articles 2.1, Article 3, Article 4, Article 5, Article 6.2, Article 8, and Article 9.2 will survive after the Project Completion Date, except upon agreement by all Parties.

10.3 The notices referred to in this Agreement shall be considered to be effective only if communicated in writing by electronic mail, or an equivalent system, to the Authorized Designee of the Parties.

10.4 The Project Period shall be December 1, 2020 through August 31, 2021.



Signatures (with date) of the NPD, the PPD and all other project co-directors (not parties to this Agreement, but performing within scope of employment by their institutions) as well as the head of their institutions (or the person responsible for IPR matters) and the end-user(s) involved in the project.

Name and position:

Signature:

date:

NPD

Dr. Leonid Chernyak, Professor



December 17, 2020

Head of Institution/Authorized Designee

Amanda Coveney



12/17/2020

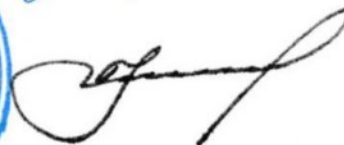
PPD

Dr. Lyubomyr Nykyruy, Professor

Rector

of Vasyl Stefanyk Precarpathian National University

Dr. Sci. Ihor Tsependa, Professor



## Appendix A



EMERGING SECURITY CHALLENGES DIVISION  
ASSISTANT SECRETARY GENERAL

DIVISION DÉFIS DE SÉCURITÉ ÉMERGENTS  
LE SECRÉTAIRE GÉNÉRAL ADJOINT

### SPS Contacts

Dr. Claudio Palestini  
Mrs. Klavdija Kaliopé  
[spc.admin@hq.nato.int](mailto:spc.admin@hq.nato.int)

ep

PLEASE DO NOT SEPARATE PAGES

14 March, 2018  
ESC(2018)0083  
SPS.SFPP G5453)

Prof. Leonid Chernyak  
University of Central Florida **Research Foundation, Inc.**  
Physics Department  
~~4111 Libra Dr.~~ **12201 Research Parkway Suite 501**  
Orlando, FL ~~32816-2385~~ **32826-3246**  
USA

Dear Prof. Chernyak,

On behalf of the NATO Partnership and Cooperative Security Committee, I am pleased to inform you that, in the framework of the Science for Peace and Security (SPS) Programme, NATO has approved the project SPS G5453 - "Radiation Hard UV Detectors against Terrorist Threats" which you have proposed in collaboration with

Prof. Igor Lubomirsky, Weizmann Institute of Science, Rehovot, Israel

To signify acceptance of this grant, all project co-directors shall initial each page of this letter and sign the acceptance statement at the end. An authorized representative of each co-director's institution must also sign the acceptance statement. In order that the project may begin without delay, electronic copies signed by each co-director and his/her institutional representative will be accepted provisionally; the completed original document must be returned to the NPD and an electronic copy submitted to the SPS Office within three months of the date of this letter.

In order for funds to be released, an intellectual property rights (IPR) agreement among the co-directors and their institutions must be submitted to the SPS Office along with the completed award letter. If the co-directors deem that such an agreement is not necessary for this project, a statement to that effect signed by all co-directors and representatives of their institutions may be provided instead.

Upon receipt of all necessary documents and signatures, an initial grant of **EUR 228,000.00 (TWO HUNDRED TWENTY-EIGHT THOUSAND EUROS)** will be paid to your account at University of Central Florida. Research Foundation, Inc. ("UCFRF"), a Florida non-profit corporation and direct support organization

acting as and instrumentality of the University of Central Florida. An overall project budget of **380,000.00 EUR** has, in principle, been approved by NATO and additional grants may be made up to this amount subject to available budgetary credits and to satisfactory project progress and reporting, as described in the SPS Multi-Year Project Management Handbook (MYP Handbook).

This grant and any further grants made to this project are to be governed by the rules set out in the MYP Handbook, the financial rules of ~~University of Central Florida~~ as identified in the project plan, and any additional rules included in this letter. While project funds are granted to Prof. Chernyak through ~~University of Central Florida~~ they shall be used as described in the attached initial budget table, subject to modification as described in the MYP Handbook (**University of Central Florida shall be changed to UCFRF hereto.**)

### Specific Conditions

- In cases where the former Yugoslav Republic of Macedonia\* is mentioned in any SPS activity-related publication, brochure, website, twitter, etc., a footnote must always be given stating *"Turkey recognises the Republic of Macedonia with its constitutional name"*.
- Please note that VAT should be covered from Project or other funds as the SPS Office is no longer able to issue VAT exemption certificates.

North Atlantic Treaty Organization - Organisation du Traité de l'Atlantique Nord  
Boulevard Léopold III - B-1110 Bruxelles - Belgique  
Tel. +32(0)2 707 4420 - Fax +32(0)2 707 2014

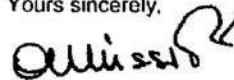
LC  
04/16/18

In order to begin the project promptly, a kickoff meeting must be scheduled among co-directors, in person or via teleconference, within 60 days of the receipt by the SPS Office of the required documents and countersigned letters. Please inform the SPS Office when this meeting has been scheduled as it will serve as the kickoff date for the project.

Correspondence and documents relating to this project should be sent to the SPS Office at [sps.admin@hq.nato.int](mailto:sps.admin@hq.nato.int); please include the SPS grant number G5453 in the subject line.

**All correspondence related to this grant must be addressed only to the SPS Project Contacts.**

Yours sincerely,



Dr. Antonio Missiroli

cc: All Co-Directors, as listed above.



APPROVAL OF PROJECT NATO ISEG.MD.SFPP G5453  
NATO MYP-RHD  
Grant Letter dated 14 March, 2018

NATO country Project Director and Partner country Project Director

I, Prof. Leonid Chernyak, NATO country Project Director (NPD), have read and accept the MYP Handbook and award letter for SPS Project G5453.

Signed:

NATO country Project Director (NPD)

Date: April 16, 2018



Leonid Chernyak

Head of the NPD's Institution

Date: 05/29/2018

Arlisia Potter



Signed: Tuesday, May 29, 2018

Legal Content Approved


SPS 15/22/18  
to 2018

I, Prof. Igor Lubomirsky, Partner country Project Director (PPD), have read and accept the have read and accept the MYP Handbook and award letter for SPS Project G5453.

Signed:

Partner country Project Director (PPD)

Date: 30/05/18



Digitally  
signed by  
Doron Amit  
ID\_032061368

Date:  
2018.05.31

09:32:54  
+03'00'

  
Dr. Doron Amit, Head  
Research Group and Projects Office  
Weizmann Institute of Science  
Rehovot 76100, Israel

Ben Natan  
Bosmat  
ID\_029560505

Ben Natan Bosmat  
ID\_029560505  
Date: 2018.05.31  
Time: 09:32:54  
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Head of the PPD's Institution

Date: .....

Short Title	SPS Ref. No.	IPR Status
MYP I Radiation Hard Detectors	65453	To Do

### Proposed by SPS Office

Category	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Final	Total
Equipment	180,000	2,000	1,000			183,000
Training	8,000		8,000			16,000
Communication & Publication	2,000	2,000	2,000	1,000	1,000	8,000
Travel	19,000	19,000	19,000	21,000		78,000
Consumables	17,000	17,000	15,000	9,000	7,000	65,000
Other	1,000	7,000	5,000	5,000	2,000	20,000
Stipends	1,000	1,000	1,000	1,000	4,000	8,000
Project Management					2,000	2,000
Total	228,000	48,000	51,000	37,000	16,000	380,000

Category	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Final	Total
Chernyak / USA						
Equipment	90,000	2,000	1,000			93,000
Training	4,000		4,000			8,000
Communication & Publication	1,000	1,000	1,000		1,000	4,000
Travel	11,000	11,000	11,000	13,000		46,000
Consumables	7,000	7,000	5,000	4,000	2,000	25,000
Other	1,000	1,000	1,000	1,000		4,000
Stipends	1,000	1,000	1,000	1,000	4,000	8,000
Project Management					2,000	2,000
Subtotal Chernyak	115,000	23,000	24,000	19,000	9,000	190,000

Lubomirsky / Israel						
Equipment	90,000					90,000
Training	4,000		4,000			8,000
Communication & Publication	1,000	1,000	1,000	1,000		4,000
Travel	8,000	8,000	8,000	8,000		32,000
Consumables	10,000	10,000	10,000	5,000	5,000	40,000
Other		6,000	4,000	4,000	2,000	16,000
Stipends						
Subtotal Lubomirsky	113,000	25,000	27,000	18,000	7,000	190,000

LC  
04/16/18

Appendix B  
Background Intellectual Property

UCFRF – None  
PNU - None