

Supplementary document
for the call on the vacancy
“Principal investigator - ERA Chair in Quantum Optics and Photonics”,
2019

Position – ERA Chair

University of Latvia announces a competition for the position of a Principal investigator - an ERA Chair in Quantum Optics and Photonics (*ERA Chair*).

The position of the ERA Chair holder is open to all EU and non-EU nationals worldwide and matches the profile on the level of “*Leading Researcher (R4)*” (<https://www.more3.eu/indicator-tool/career-stages-r1-to-r4>). The ERA Chair holder is expected to be an excellent researcher as well as a science manager and project designer with a proven record of effective leadership.

The ERA Chair should be experienced and interested in:

- quantum optics, laser technologies, photonics and related industrial activities;
- project design for EU Framework programmes, including Quantum Flagship;
- research activities which fits the topics and infrastructures of NSP FOTONIKA-LV.

The project

The ERA Chair is expected to implement the European Regional Development Fund project No. 1.1.1.5/19/A/003 “*The Development of Quantum Optics and Photonics in University of Latvia*” (*PROJECT*), which is a refinanced project submitted initially for Horizon 2020 ERA Chair programme. The implementation period of the PROJECT is 1st May 2019 – 30th November 2023 (*55 months*). The total budget of the PROJECT is 2.5 million EUR.

The PROJECT is realized at the University of Latvia (*University, LU*) and its National Science Platform (*NSP*) FOTONIKA-LV. NSP FOTONIKA-LV includes the Laboratory of Quantum Optics and the Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry of the Institute of Atomic Physics and Spectroscopy (*LU ASI*) and the Institute of Astronomy. NSP FOTONIKA-LV was created to be a centre of excellent research in the European Research Area and to be a strong and welcomed partner/coordinator in consortiums of EU Research and Innovation Framework programme projects.

The **general objective** of the PROJECT is to boost the research excellence of University of Latvia in the field of “*Quantum Optics and Photonics*”, and to increase its visibility at the European Research Area and globally. The specific objectives are:

Objective No. 1. To recruit an ERA Chair holder and his/her team to make progress in the field of “*Quantum Optics and Photonics*” at University of Latvia

An excellent researcher with large scientific and management experience in “*Quantum Optics and Photonics*” will be recruited for the whole duration of the project (*more than 4 years*) in an open competition and preferably with the position sustained after the end of the project. He/she will contribute to the domain at the NSP FOTONIKA-LV and University of Latvia as such, by employing the competences already accumulated at the University and in Latvia. The ERA Chair will hold a position within LU, which will allow him/her to make appropriate resource allocation decisions, supervise team members and with academic freedom to apply

for the research funding contributing to increase of research excellence of the team. The ERA Chair will have sufficient resources to recruit his/her research team of about 4-6 researchers.

Objective No. 2. To conduct excellent research in the field of “Quantum Optics and Photonics”

The ERA Chair with his/her team will contribute with excellent research in “Quantum Optics and Photonics”. It is expected that during the project the research team of an ERA Chair will prepare at least 24 publications in journals and conferences proceedings that will be indexed in SCOPUS or Web of Science database. As the PROJECT covers only salaries of the team and minor research and material costs, the access to advanced research infrastructure of the NSP FOTONIKA-LV and the University will be granted as well as the possibility to apply for research instrumentation development projects within the calls of European Regional Development Funds (ERDF). Close to one million EUR is granted for the coming two years for the renovation of physical infrastructure (*premises*) of NSP FOTONIKA-LV.

Objective No. 3. To compete for research funding

The ERA Chair and his/her team will prepare project proposals for Horizon 2020 and Horizon Europe calls, and the Quantum Flagship on the EU level, and locally competitive funding for ERDF and Latvian Council of Science funds. It is expected that during the whole period of the project (4.5 years), at least 6 high quality project proposals will be prepared, from which 4 are project proposals for EU Framework Programme calls, 1 project proposal for ERDF call and 1 project proposal for Latvian Council of Science call. This will substantially increase the funding for the research and will allow to enlarge the research team of an ERA Chair.

Objective No. 4. To develop Strategy and to implement structural changes of NSP FOTONIKA-LV and LU

ERA Chair will lead a group working on “Human Resources Strategy for Researchers”, implementing the European Research Area priorities, including an open recruitment policy, gender balance, peer review, and innovative doctoral training for NSP FOTONIKA-LV and the University. Productive discussions within NSP FOTONIKA-LV and the University administration about structural changes will be made followed by the implementation accordingly. “Strategy for the Development of Quantum Optics and Photonics in NSP FOTONIKA-LV and University of Latvia” will be developed and discussed publicly to ensure the growth in quality and quantity, and long-term sustainability of research excellence.

Objective No. 5. To network, communicate and disseminate

Good cooperation and networking with top level research institutions and industry is a prerequisite of research excellence and its sustainability. An ERA Chair with the team will work on establishment of new cooperation networks and strengthening old ones. Research institutions and companies will be visited, conferences and exhibitions attended. Two international conferences on “Quantum Optics and Photonics - Riga 2021/2023” and summer schools will be organized in Latvia gathering stakeholders from academia and industry.

Implementation of listed objectives and activities of ERA Chair in accordance with the PROJECT'S planning and Horizon 2020 ERA Chair program, will ensure the following **impact**:

1. Increased attractiveness of NSP FOTONIKA-LV and the University, as well as Latvia and the Baltic countries for internationally excellent and mobile researchers, including local nationals;
2. Increased research excellence of NSP FOTONIKA-LV and the University in the specific field of “Quantum Optics and Photonics”;

3. Improved capability of NSP FOTONIKA-LV and the University to apply successfully for internationally competitive research funding (*including Framework Programme funding*);
4. Institutional changes for NSP FOTONIKA-LV and the University for implementing the European Research Area priorities (*including an open recruitment policy, gender balance, peer review, and innovative doctoral training*).

Tasks, requirement and resources for ERA Chair

Main **tasks** of the ERA Chair:

1. To perform research in “*Quantum Optics and Photonics*” within NSP FOTONIKA-LV and the University resulting in at least 24 scientific publications in journals or conference proceedings. This indicator should be achieved by the ERA Chair and his/her team till the end of the PROJECT. Innovative activities should result in at least 2 patent applications;
2. To form and manage an ERA Chair’s research team of about 4-6 members that will be selected in an open competition via the EURAXESS portal. The team should contribute to the achievement of the results of the PROJECT, acting coherently with local colleagues, groups and labs. Local and foreign candidates are welcome for the participation in the competition;
3. To compete for research funding. The preparation of high quality project proposals, including at least 4 project proposals for Framework Programmes Horizon 2020 and Horizon Europe or other international research funding programmes, at least 1 project proposal for European Regional Development Fund call and at least 1 project proposal for the Latvian Council of Science call;
4. To elaborate, in partnership with local researchers, the strategy for the progress in the field of “*Quantum Optics and Photonics*” at the University and in its units. To develop the “*Human Resources Strategy for Researchers*” for the NSP FOTONIKA-LV and the University. To foster and implement the necessary structural changes at the University needed for NSP FOTONIKA-LV to be a strong player within the European Research Area;
5. To sustain the existing and broaden the network of research and industry partners on the EU scale. To communicate and disseminate the results and the aims of the ERA Chair PROJECT. Supervise the preparation of two “*Quantum Optics and Photonics - Riga 2021/2023*” conferences and summer schools in Latvia. To offer a specific course on quantum optics and photonics;
6. To ensure the effective management of the PROJECT in collaboration with the project coordinator in order to achieve all measurable results of the PROJECT that are set in the PROJECT’s description.

Additional task of the ERA Chair will be:

7. To monitor the full landscape of “Quantum Optics and Photonics” in Latvia, Europe and world-wide, and adapt and lead accordingly.

For the implementation of the PROJECT, the ERA Chair will be joined and helped by the coordinator, administrator, leader of NSP FOTONIKA-LV and Science Department of the University.

Highly desirable requirements of ERA Chair:

1. He/she holds a PhD in physics or engineering in the PROJECT domain;
2. He/she is an outstanding researcher with a Hirsch index of at least 25 (*Google Scholar*). An industrial experience will be an asset;
3. The research interests of the ERA Chair covers the field of “*Quantum Optics and Photonics*” and are in general in line with the research interests of NSP FOTONIKA-LV research community and several research structures of the University of Latvia;
4. He/she is an outstanding, forward looking science manager with leadership experience (*for example, laboratory leader, department leader etc.*);

5. He/she has experience in project proposal design (*e.g. Framework Programmes, etc.*) and has good command of English. Experience with industry innovation activities will be an advantage;
6. He/she has good communication skills and an inspiring loyalty to the University fostering structural changes of the institution;
He/she is committed to work as an ERA Chair in full time position for the whole duration of the PROJECT and a potential willingness to keep the position longer (*loyalty to NSP FOTONIKA-LV*). Candidates should move to Latvia for holding this position.

Resources provided to the ERA Chair:

1. Salary of 8000 EUR/month (*~ 5500 EUR/month after taxes*);
2. Relocation expenses to Latvia: *~ 7000 EUR*;
3. Equipment expenses: 38 000 EUR (*The ERA Chair's project call allows to cover only minor equipment expenses*);
4. Consumable expenses: 30 000 EUR (*The ERA Chair's project call allows to cover only minor consumable expenses*);
5. Office rooms for the ERA Chair and his/her team in the new campus of the University of Latvia ("*Science house*") and in the NSP FOTONIKA-LV headquarters building (*Skunu 4*) in old Riga;
6. Laboratory rooms for the ERA Chair and his/her team. NSP FOTONIKA-LV has secured specially up to 300 m² space in old Riga (*Skunu 4*) for the needs of the ERA Chair and his/her team. The location in the very centrum of Riga is an advantage for various outreach activities targeting eventual STEM students, general public and guest of Riga;
7. Full access to advanced and sophisticated laboratory equipment: Quantum Optics Laboratory (*leader – J. Alnis*) and Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry (*leader – A. Ubelis*). These laboratories were initiators and designers of the current PROJECT and they are ready to ensure a productive support to ERA Chair and his/her team. Additional access to various research labs of University of Latvia and other research institutions in Latvia, among which some are decade long partners of members of NSP FOTONIKA-LV, will be provided on collegial open access basis;
8. Funds to cover the cost of his/her research team (*researchers to be selected through international competition via the EURAXESS portal*) – about 800 000 EUR for salaries; Travel expenses to conferences and the research and industry partners worldwide, and incoming travels – about 135 000 EUR (*for all PROJECT activities*).

Evaluation process

ERA Chair candidates will be evaluated by a Selection Committee. An Advisory Committee, consisting of local and foreign research and industry leaders, will be part of the Selection Committee. Leader of the Advisory Committee – Dr. Sune Svanberg¹ senior professor at Lund University (*Lund, Sweden*) and distinguished professor at South China Normal University, Centre for Optical and Electromagnetic Research (*Guangzhou, China*). Distinguished member of the Advisory board - Dr. Lorenzo Pavesi, University of Trento (*Italy*). Leader of the Selection Committee – Dr. Arnolds Ubelis, a leader of the LU ASI Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry, leader of NSP FOTONIKA-LV and former leader of the EC Framework Program National Contact Point System (*Latvia*).

Selection of a best candidate for an ERA Chair will be accomplished in two rounds. The first round is the current worldwide open competition. Applicants are expected to submit:

- 1) his/her CV,

¹ CV of Sune Svanberg, <http://www.atomic.physics.lu.se/staff/professors/sune-svanberg/>

- 2) Motivation letter (*that includes description of his/her research and leadership experience, vision for a work in the ERA Chair position, and information concerning 1-3 colleagues to be contacted for an opinion on the candidate*).

These documents should be submitted electronically to: Aigars.Atvars@lu.lv with the title of the e-mail “*ERA Chair competition*”.

Documents submitted by candidates will be evaluated and ranked by the Selection committee and best few candidates will be nominated for the second selection round.

In the second round, applicants will be invited (*separately*) to visit University of Latvia and to give a presentation describing their research activities and their vision and work plan in the role of ERA Chair for NSP FOTONIKA-LV and the University of Latvia (*travel costs will be covered by the PROJECT*).

Additional information

Half time recruitment is possible for the first few months, and up to 12 months in case of specific conditions, e.g., the applicant is currently holding a H2020 European Research Council grant in last year stage.

For more information:

- Coordinator of the PROJECT Aigars Atvars, Aigars.Atvars@lu.lv, +37125986724, lead researcher, Quantum Optics Laboratory, Institute of Atomic Physics and Spectroscopy, University of Latvia;
- Leader of Advisory Committee Prof. Sune Svanberg, Sune.Svanberg@fysik.lth.se, Lund University (Sweden) and South China Normal University, Centre for Optical and Electromagnetic Research (China);
- Distinguished member of Advisory Committee Prof. Lorenzo Pavesi, Lorenzo.Pavesi@unitn.it, University of Trento (Italy);
- Leader of Selection Committee Arnolds Ubelis, arnolds@latnet.lv, lead researcher, leader of Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry, Institute of Atomic Physics and Spectroscopy, University of Latvia, leader of National Science Platform FOTONIKA-LV;
- Administrator of the PROJECT Dina Berzina, Dina.Berzina@lu.lv, researcher, Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry, Institute of Atomic Physics and Spectroscopy, University of Latvia;
- Institute of Atomic Physics and Spectroscopy of University of Latvia, www.asi.lv
- University of Latvia, www.lu.lv

University of Latvia and National Science Platform FOTONIKA-LV

University of Latvia² (LU) is the largest university in Latvia, having more than 130 state accredited academic and professional research programs, more than 14 000 students, 13 faculties and over 20 research institutes and independent study centres. LU is realising structural changes to become more excellent in research and to be in line with EU and OECD targets concerning science, innovation, education and research management. EU Regional Development Funds are used effectively to support these changes. The largest challenge nowadays is the development of the **new campus** of LU (see Figure 1), where all faculties and many research institutes will have premises for research and research training of students and young researchers. “Natural Sciences’ house”³ and “Sciences’ house” are already built and populated. Laboratories of the Institute of Atomic Physics and Spectroscopy partly moved to “Science house” in April 2019.



Figure 1. The plan of the Campus of University of Latvia (left). Science house in Spring 2019 (right).

The National Science Platform (NSP) FOTONIKA-LV of University of Latvia includes research units - Quantum Optics Laboratory and Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry of Institute of Atomic Physics and Spectroscopy and the Institute of Astronomy. NSP FOTONIKA-LV was created to be a centre of excellent research in European Research Area and to be a strong and welcomed partner/coordinator in consortiums of EU Research and Innovation Framework programme projects.

NSP FOTONIKA-LV is the forerunner of Association FOTONIKA-LV of three institutes of University of Latvia – Institute of Atomic Physics and Spectroscopy, Institute of Astronomy and Institute of Geodesy and Geoinformatics. The Association FOTONIKA-LV realised several FP7 projects, the largest being FP7- REGPOT-2011-1 project No. 285912 “Unlocking and Boosting Research Potential for Photonics in Latvia – Towards Effective Integration in the European Research Area” (2012 – 2015, 3.8 million EUR)⁴. Thanks to REGPOT project the research capacity of FOTONIKA-LV was strengthened – the research infrastructure was updated, experienced researchers were recruited and repatriated (including J. Alnis, who established the Quantum Optics Laboratory), and collaboration with local and foreign partners, including industry was realised and an international work environment was created.

² <http://www.lu.lv/eng/>

³ <http://www.tornakalns.lv/>

⁴ “Unlocking and Boosting Research Potential for Photonics in Latvia – Towards Effective Integration in the European Research Area”, http://cordis.europa.eu/project/rcn/101514_en.html

NSP FOTONIKA-LV is lead by Dr. Arnolds Ubelis, leader of LU ASI Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry, former leader of the Framework Program National Contact Point system (*Latvia*) and former coordinator of above mentioned REGPOT project. NSP FOTONIKA-LV has defined its two research directions – Quantum sciences and Space sciences. The ERDF ERA Chairs project No. 1.1.1.5/19/A/003 “*The Development of Quantum Optics and Photonics in University of Latvia*” (*PROJECT*) is aimed to strengthen the direction of Quantum sciences with targeted accent on “*Quantum Optics and Photonics*”. NSP FOTONIKA-LV actively participates in various Horizon 2020 calls, including Twinning, Teaming, ERA Chairs, FET Open and MSCA- RISE.

NSP FOTONIKA-LV is located in Old Riga (*Skunu street 4*), in the former building of Institute of Atomic Physics and Spectroscopy (*see Figure 2*). The ERA Chair will have an opportunity to implement its research activities in two places. Premises of the newly built “*Science house*” will be an appropriate place for research training of young researchers and for networking and collaboration with other units in the domain at the University. The building in Old Riga (*headquarters of NSP FOTONIKA-LV and this PROJECT*) with about 1000 m² and appropriate facilities for experimental research has enough space for various fundamental and applied research activities.

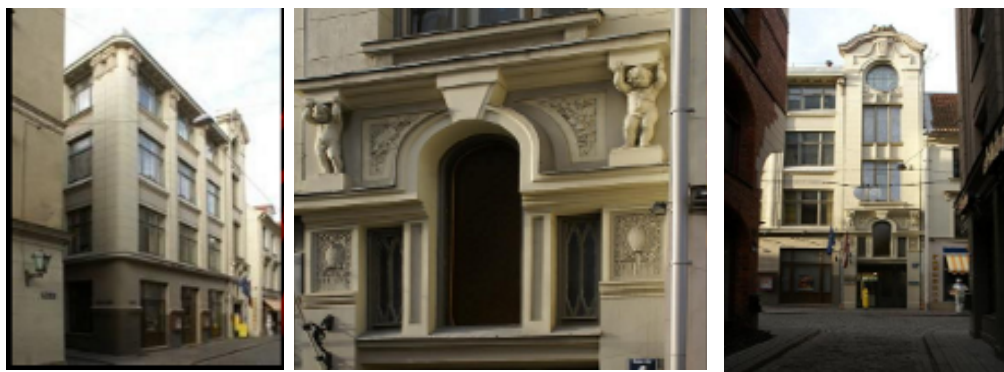


Figure 2. Host building of National Science Platform FOTONIKA-LV in Old Riga.

(Figure 2 - A photograph of the building in Skunu street 4 - “Jugendstil” portal. The building was built in 1911-1912 according to the design of the architect Paul Mandelstam. The architectural form of the building combines neo-classical and vertical Jugendstil elements, suited to the narrow streets of historic Old Riga. The entrance portal is graced by children's figures, that symbolize mediators between the spiritual and material worlds⁵. The stairway of the building featured stained-glass Jugendstil windows. The building has a rational and simple design. It is the first building in the Baltic States to use metal-column-beam structural elements with reinforced concrete panels.)

Research themes within Quantum Optics and Photonics related laboratories of NSP FOTONIKA-LV:

- a) **Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry.**
Leader - Dr. Arnolds Ubelis, Personnel ~ 20, Research themes: high temperature flash photolysis of sulphur, selenium, tellurium vapour, vapours of tin and lead salts; recombination and photorecombination of sulphur, selenium and tellurium atoms in the ground and metastable states; secondary photolysis and photochemical processes in the vapours of tin and lead salts; lifetime and branching ratio studies of energy states of sulphur, selenium, tellurium, arsenic and phosphorus atoms by UV, VUV

⁵ <http://www.jugendstils.riga.lv/JugendstilsRiga//Mandelshtams/skunu4/>

and laser spectroscopy; studies of various negative ions, molecular beam research; processes of photochemistry in polluted atmosphere; interdisciplinary studies of environmental problems.

The laboratory as a member of Association FOTONIKA-LV (*currently NSP FOTONIKA-LV*) has remarkable success rate in the competition for financed FP6 and FP7 projects^{6,7,8,9,10} and is persistently targeting relevant calls of H2020 (*Widening calls, ERC grants, MSCA PEOPLES programme, FET-open and SMEs disruptive innovations*) with many competitive project proposals in the role of coordinator and for more than 6 proposals having marks above quality threshold.

- b) **Quantum Optics Laboratory.** Leader - academician Dr. Janis Alnis. Personnel ~ 7. Research themes: whispering gallery mode microresonators, optical frequency metrology with a femtosecond optical frequency comb; development of optical frequency standards and comparison with radio-frequency standards; development of ultra-stable resonators for laser stabilization; free-space optical frequency transfer and distance measurements; global network of sensors, Internet of Things. The laboratory received 2 financed ERDF projects and one National Science Council Projects. Dr. Janis Alnis is a very sought-after demanded partner in H2020 project proposals and was partner for two highly marked FET-open project proposals coordinated by colleagues from Lund University for this very competitive call with success rate about 5-7%.

An overview of research activities of NSP FOTONIKA-LV are seen in an Abstract book ([Link](#)) of “The 3rd International Conference FOTONIKA-LV “Achievements and Future Prospects”. Four years after the end of the project: FP7-REGPOT-2011-1, No 285912, FOTONIKA-LV “Unlocking and Boosting Research Potential for Photonics in Latvia – Towards Effective Integration in the European Research Area” Riga, 24–25 April 2019.”

⁶ The FP6 project: “Atmospheric Composition Change: a European Network, Proposal Acronym: ACCENT. Network of Excellence, Contract No:GOCE – CT – 2004 – 505337 (2004-2011, Total about 5 M€, LV (University of Latvia = 113 850 €). Principal investigator Dr.A.Ubelis.

⁷ FP7-PEOPLE-2009-IRSES, COLIMA, Nr. 247475, Coherent manipulation of light and matter via interferences of laser-dressed states. Coordinated by the University of Latvia, Coordinator Dr.A.Ekers.

⁸ NOCTURNAL ATMOSPHERE - FP7-PEOPLES-2011-IRSES project, contract Nr294949. “Secondary photochemical reactions and technologies for active remote sensing of nocturnal atmosphere” (01.05.2012-30.04.2016). Coordinated by the University of Latvia, Coordinator Dr.A.Ubelis.

⁹ FP7-PEOPLES-IRSES-2013. Grant. 612691. REFINED STEP. An international network on new strategies for processing calcium phosphates (03.11.2013-02.11.2017). Coordinated by the University of Latvia, Coordinator Dr.A.Ubelis.

¹⁰ FP7-PEOPLE-2012-IRSES, BIOSENSORS-AGRICULT. Nr.316177 - DEVELOPMENT OF NANOTECHNOLOGY BASED BIOSENSORS (2012-2015). Coordinated by the University of Latvia, Coordinator Dr.A.Ubelis.

Main research equipment of NSP FOTONIKA in Quantum Optics and Photonics field

Main research equipment of LU ASI Quantum Optics Laboratory and Laboratory of Atomic Physics, Atmospheric Physics and Photochemistry that will be accessible to ERA Chair and his/her team:

- Frequency comb: Menlo systems, 2013 (*see Figure 3a*);
- Supersonic Molecular Beam research facility (*see Figure 3b*);
- Worldwide first mobile ion beam research facility - apparatus GRIBA (*see Figure 3c*);
- 1 Hz laser system (*ECDL980-1HZFP*), 2014;
- Laser frequency narrower–stabilisator FP1K-LB;
- 780 nm laser system (*ECDL780-RB-AOM-FB*), 2014;
- Universal LAMBDA Physics Excimer lasers combined with dye laser systems;
- Universal Excimer laser for basic and applied research applications, 2019
- Radiofrequency synthesizer SG382, 2014;
- GPS registration set FTS500;
- High-resolution monochromator 1000 MP with CCD detector for spectral measurements of emission in UV and VIS;
- McPerson Vacuum Ultraviolet, Ultra Violet spectrometer;
- Universal custom made high resolution monochromator for measurements in far UV, visible and infrared regions using changeable prism and spectra recording systems and data processing systems for normal intensities and cases where quantum counting is needed;
- Spectrometer AVASPEC 2048-2 available for measurement of the absorption and fluorescence spectra within UV, VIS and near IR spectral region;
- Hyperspectral imaging camera NUANCE;
- Tunable Ti:Sa laser system equipped for frequency doubling (*from IR to UV*).
- and other;

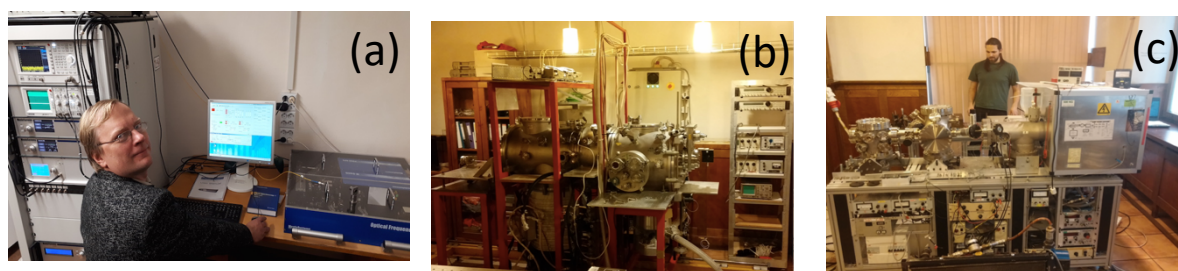


Figure 3. (a) Optical Femtosecond frequency comb, (b) Molecular beam setup, (c) Ion beam apparatus GRIBA.

Main research infrastructure of the member of NSP FOTONIKA-LV - Institute of Astronomy, University of Latvia:

- Schmidt telescope (Figure 4a, 4b);
- Riga Satellite Laser Ranging station (Figure 4c).

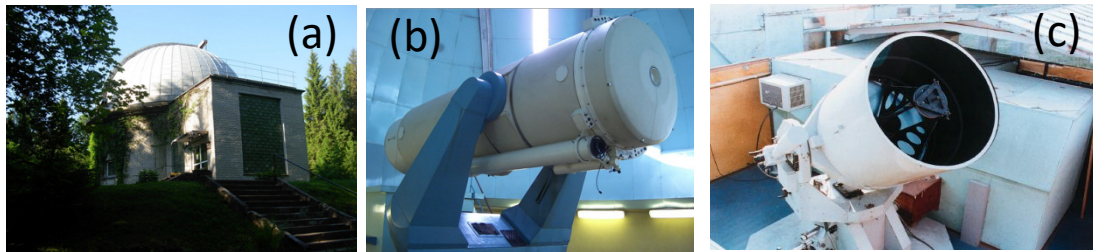


Figure 4. (a) Baldone Schmidt telescope's building, (b) Baldone Schmidt telescope, (c) Riga Satellite Laser Ranging station.

Research teams of University of Latvia working in the field of “Quantum Optics and Photonics”

The ERA Chair and his/her team can realize the collaboration with various research groups of University of Latvia to get access to their research equipment and to boost the development of Quantum Optics and Photonics:

The **Institute of Atomic Physics and Spectroscopy of University of Latvia** (LU ASI)¹¹:

- 1) *Laboratory of Theoretical Physics*. Leader – Dr. Rita Veilande. Personnel ~ 4.
- 2) *Biophotonics Laboratory*. Leader – academician, Prof., Dr. Habil Phys. Janis Spigulis. Personnel ~ 15;
- 3) *Laboratory of high-resolution spectroscopy and light source technology*. Leader Dr. Atis Skudra, Personnel ~10;
- 4) *Laboratory of atomic and atmospheric physics and photochemistry*. Leader - Dr. Arnolds Ubelis, Personnel ~ 20;
- 5) *Quantum Optics Laboratory* – academician, Dr. Janis Alnis, Personnel ~ 7.

Lasercentre¹² of University of Latvia (*former laboratories of LU ASI*):

- 6) *Atomic and Molecular Physics Laboratory*. Leader - academician, Prof. Marcis Auzinsh. Personnel ~ 10;
- 7) *Molecule Optical Polarization Laboratory*. Leader - academician, Prof. Ruvin Ferber. Personnel ~6;
- 8) *Laboratory of Astrospectroscopy*. Leader - Dr. Laimons Zacs. Personnel ~ 5.

Institute of Solid State Physics¹³ of University of Latvia:

- 9) *Laboratory of Optical Spectroscopy*¹⁴. Leader – Dr. Maris Springis. Personnel ~ 7;
- 10) *Laboratory of Nanomaterials and Optoelectronics*¹⁵. Leader – Dr. Boriss Polyakov. Personnel ~ 12;
- 11) *Laboratory of Solid State Radiation Physics*. Leader – Dr. Larisa Grigorjeva. Personnel ~ 7;
- 12) *Laboratory of Organic Materials*¹⁶. Leader – academician , Dr. Martins Rutkis. Personnel ~ 17;

Institute of Chemical Physics¹⁷ of University of Latvia:

- 13) *Nanooptics Lab*. Leader – Dr. Juris Prikulis. Personnel ~ 5.

¹¹ <http://www.asi.lv/New/en/laboratories.htm>

¹² <http://www.lasercentre.lv/>

¹³ <http://www.cfi.lu.lv/>

¹⁴ <http://www.cfi.lu.lv/eng/research-units/department-of-crystal-and-optoelectric-materials/laboratory-of-optical-spectroscopy/>

¹⁵ <http://www.cfi.lu.lv/eng/research-units/department-of-crystal-and-optoelectric-materials/laboratory-of-semiconductor-optoelectronics/>

¹⁶ <http://www.cfi.lu.lv/eng/research-units/department-of-photonics-materials-physics/laboratory-of-organic-materials/>

¹⁷ http://www.kfi.lu.lv/en/about_ICP.html

Industry in Latvia working in the field of Photonics and the support of NSP FOTONIKA-LV provided to industry

ERA Chair can realize the collaboration with local industry that works in photonics field, for example,

- *Ceram Optec, Ltd.*¹⁸, the producer of optical fibers, annual turnover ~ 21 MEUR;
- *Groglass, Ltd.*¹⁹, the producer of anti-reflective glass, annual turnover ~ 17 MEUR;
- *Light Guide Optics International, Ltd.*²⁰, the producer of optical fibers, mainly for medical applications, annual turnover ~ 19 MEUR;
- *HansaMatrix, Joint Stock Company*, multipurpose electronic system development, annual turnover ~ 19 MEUR;
- *ISP Optics Latvia, Ltd.*²¹, the producer of optics for defence applications, annual turnover ~ 9 MEUR;
- *Baltic Scientific Instruments, Ltd.*²², the producer of various X-ray detectors, annual turnover ~ 4 MEUR;
- *Sidrabe, Ltd.*²³, the designer and manufacturer of vacuum coating systems, and developer of unique thin film technologies, annual turnover ~ 1 MEUR.

NSP FOTONIKA-LV realizes collaboration with industry.

Project development “task force” of NSP FOTONIKA-LV, in accordance with the mission of the Platform, is assisting in the design of more than ten H2020 SMEs instrument (success rate of the call 5-7%) project proposals in the area of photonics and space related technologies, aiming to bring to the market disruptive innovation prototypes. The proposals received marking close to the threshold (13 points out of max 15) and are in the resubmission process targeting to overcome 13 points and to get financing (which will mean dotation to the company from EU H2020 budget close to 2.5MEUR). This should result in effective scaling up and market reach of the company, leading to turnover above 25 MEUR in 5-7 years after the project implementation. This is clear evidence, that Latvian photonics industry has a potential to attract investors and to go for exponential growth, and to double current total turnover from 200 MEUR to 0.5 billion EUR and more.

Since 2018 the team of researchers from NSP FOTONIKA-LV is implementing a collaboration project with Thorlabs²⁴, Inc. (USA) concerning absorption cells for stabilization of diode laser frequencies.

¹⁸ <http://www.ceramoptec.de/home.html>

¹⁹ <http://www.groglass.com/>

²⁰ www.z-light.lv

²¹ www.ispoptics.com/

²² www.bsi.lv

²³ <http://www.sidrabe.com/>

²⁴ <https://www.thorlabs.com>

Horizon 2020

Work Programme 2018-2020

15. Spreading Excellence and Widening Participation²⁵**WIDESPREAD-04-2019: ERA Chairs**

Specific Challenge: With adequate institutional support outstanding researchers can have a decisive and positive impact on the culture and performance of research institutions. Yet issues such as the availability of research funding, institutional rigidities and access to resources can hamper their mobility to promising institutions, particularly in low R&I performing countries. ERA Chairs actions will address the specific challenge of creating the appropriate conditions for high quality researchers and research managers to move and engage with institutions willing to achieve excellence in the scientific domain of choice and modify their research and innovation landscape.

Scope: The ERA Chairs actions will support universities or research organisations with the objective of attracting and maintaining high quality human resources under the direction of an outstanding researcher and research manager (*the "ERA Chair holder"*) and in parallel implement structural changes to achieve excellence on a sustainable basis.

The scientific field can be any domain of research and innovation addressed under the Treaty on the Functioning of the European Union, however it needs to be closely connected with the activities of the ERA Chair holder and fully capitalise on his/her presence and expertise.

Research organisations interested in establishing an ERA Chair shall submit a proposal based on a strengths, weaknesses, opportunities, and threats (*SWOT*) analysis, aimed at structural change in the institution and ensuring that the conditions are in place to foster excellent research. Proposals should include arrangements for compliance with ERA priorities including the European Charter for Researchers & Code of Conduct for the Recruitment of Researchers, a description of the necessary investments in research projects, facilities and infrastructures and how those will be achieved as, for example, through the use of Cohesion Policy funds, and/ or a better use of the installed research capacity (*in particular of EU cofounded research infrastructures & facilities*). Proposals should outline how the proposed activities will positively induce a change in current practices.

ERA Chair holders should be excellent researchers and research managers in the given field of research, with a proven record of effective leadership. They should establish their own research team fully integrated in the coordinator's institution to significantly improve its research performance in the scientific domain of choice and to be more successful in obtaining competitive funding. The ERA Chair holder should have a position within the organisation/university, professor or similar, that will allow her/him to make appropriate resource allocation decisions, supervise team members and freely apply for research funding. A letter of the head of the institution clearly describing the intended remuneration package of the ERA Chair holder and the criteria on which the level of remuneration has been established, as well as his/her roles, level of responsibility and obligations should be included within the proposal. This will allow for the determination of the commitment of the institution and feasibility of the ERA Chair tasks.

The position of the ERA Chair holder must be open to all EU and non-EU nationals but shall match the profile of an "Established Researcher (R3)" or "Leading Researcher (R4)" as set out in the European Framework for Research Careers. Moreover, given the objectives of

²⁵ http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-sewp_en.pdf

the action, internal mobility within the institution hosting the grant is excluded except in exceptional and duly justified cases. The appointment of an ERA Chair holder will be undertaken by the host institution at the beginning of the action and must follow an open, transparent and merit-based recruitment process that will be monitored by the European Commission.

It is expected that the Chair holder commits him/herself for the full duration of the grant. The ERA Chair holder is to be appointed in a full-time position (*permanent or non-permanent*) in accordance with the national legislation of the institution hosting the grant.

The grant that can have a duration of five years maximum will cover the appointment of the ERA Chair holder and a number of team members (*e.g. their salaries, recruitment costs, administrative costs, travel and subsistence costs*).

The grant will also provide a contribution towards measures aimed at facilitating structural changes in the institution (*e.g. costs for trainings, meetings, publications and managing Intellectual Property Rights (IPR)*). While the action does not focus on equipment and consumables, these could be accepted if they constitute only a minor part of the total Horizon 2020 funding requested and are deemed necessary to fulfil the action's specific scope and objective). For grants awarded under this topic and type of action, the following cost categories will be ineligible costs:

- Infrastructure costs;

The respective option of Article 6.5.C of the Model Grant Agreement will be applied.

The Commission considers that proposals requesting a contribution from the EU of EUR 2.5 million, would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting lower amounts.

Expected Impact:

- Institutional changes within the ERA Chair host institution allowing for its full participation in the European Research Area.

- Increased attractiveness of the institution for internationally excellent and mobile researchers (*including a policy of compliance to the European Research Area priorities like an open recruitment policy, gender balance, peer review and innovative doctoral training*).

- Increased research excellence of the institution in the specific fields covered by the ERA Chair holders illustrated quantitatively and qualitatively through indicators such as expected future publications in peer reviewed journals, collaboration agreements with businesses, intellectual property, new innovative products or services.

- Improved capability to compete successfully for internationally competitive research funding.