To Photonics21Secretariat
via eMail: *secretariat@photonics21.org*

Dear Photonics21 Secretariat

We herewith submit the nomination of the following Photonics21 Board of Stakeholders candidate
Tampere University / Mircea Guina

- Letter of Nomination -
Photonics21 Board of Stakeholders
Election 2023

Photonics21 Board of Stakeholders - Letter of Nomination

1. **Full legal name of the affiliation nominated as BoS Member (candidate's organisation):**

   Tampere University

2. **Full contact details of the affiliation (street, postal code, country) nominated as BoS Member and invoice address** *(In accordance with the Terms of Reference §5, which the Affiliation acknowledges having received, an Annual Service fee will be invoiced every year during the first quarter to the BoS Member. By signing the present letter, the BoS candidate agrees to pay this Membership Fee. The Fee will be considered an asset of the Photonics 21 AISBL in accordance with its statutes (article 12b).)*

   Tampere University
   Kalevantie 4
   33100 Tampere
   Finland

   Invoicing address:
   Tampere University Foundation sr
   PO Box 774
   FI-00074 CGI
   Finland

3. **Name of the suggested BoS Representative (the personal candidate)**

   Mircea Guina

4. **Information about the BoS candidate and the BoS representative**

a) Description of the activities and information about the expected contribution and value added the nominated BoS member (candidate's organisation) will bring to the BoS[1]

Tampere University (TAU) is the leading university in Finland in the area of Photonics, with significant investments to the infrastructure and broad international recognition in academic and industrial sectors. The photonics cluster at TAU includes 14 professors and over 150 researchers (www.tuni.fi/photonics), covering a broad range of disciplines including theoretical and experimental quantum optics, material science, laser technology, metamaterials, optoelectronics technology, and light-based applications. TAU host a unique European infrastructure on optoelectronics technologies that includes 4 MBE reactors for synthesis of GaAs-, InP- , and GaSb-based heterostructures, and a centralized nanofabrication clean-room enabling fabrication of optoelectronic devices all the way to chips assembled for application use. At national level TAU has been profiled as the leading Photonics-related higher education in

[1] The candidate is aware and accepts that according to the Photonics21 Terms of Reference (§ 5 (10) a member ship fee - as determined by the General Assembly of the Association - needs to be paid to the Photonics21 association.

Finland and has received dedicated funding to further strengthen the community and enhance the impact of photonics science and technologies at societal level.

What makes TAU a special place in the photonics environment it is the instrumental role played in establishing laser industry in Finland (largely located in Tampere area). There are currently 12 spin-offs from TAU in laser field including prominent players in the area of laser technology, such as Modulight Oy, Amliconyx Oy, Vexlum Oy and other highly specialized and emerging spin-offs (e.g. Picophotonics Oy). TAU is also recognized as a strong node of competence in Scandinavia and in general in Europe with good visibility across education, leading science, and technological impact, which would provide a unique interaction perspective with Photonics21. In fact, TAU (previous under the umbrella of Tampere University of technology) has been a member Photonics21 for more than 15 years and had two mandates in the Board of Stakeholders (2015-2022), contributing largely to the activities in WG 7 related to Photonics Core Technologies. Important role to be carried out in a possible new mandate is harmonizing large scale cooperation plans regarding photonics infrastructure and Pilot Line initiatives in Finland and Europe. Moreover, we see our position as making a strong contribution at the interface between leading edge academic research and industry.

b) Description of the activities and information about expected contribution and value added the BoS Representative (candidate / person) will bring to the BoS.

Prof. Mircea Guina has over 20 years of working experience in photonics, with outstanding contribution to optoelectronics technology, spanning from epitaxy of novel heterostructures, to new devices, and their applications. Since 2008 Prof. Guina leads the scientific activity at the Optoelectronics Research Centre (https://research.tuni.fi/orc/) of the Tampere University (Tampere University of Technology until 2018), one of the largest optoelectronics group in Eu-rope focused on molecular beam epitaxy (MBE). Prof. Guina has gained a wide visibility for leading work concerning vertical external cavity surface emitting lasers and high efficiency solar cells, and more recently photonic integrated circuits. He has an outstanding involvement in organizing major conferences, and supervised more than 20 PhD students, most of which are working in semiconductor laser industry. Furthermore he is a strong advocate of entrepreneur-ship activities in photonics and has been involved in creation of 3 start-up, the most recent being Vexlum Oy (www.vexlum.com), a rapidly growing laser company addressing quantum technology applications. What makes Mircea's work unique and truly inspirational as a leader is that he has been able to advance several research fields over a significant number of years, all the way from material science to commercialization. He has been also instrumental in set-ting up the Flagship on Photonics Research and Innovation (PREIN), a national network uniting leading research groups in photonics. Mircea is a Fellow of Optica and SPIE.

Prof. Guina brings in a wide European perspective in terms of collaboration. He has been a member of Photonics 21 (WG6/WG7) since 2007, he is a representative of TAU in EPIC, has been involved in more than 10 EU, has won an ERC AdG project, and has been a BoS representative in Photonics 21 with a four-years mandate (2018-2022). He is currently involved in planning of Pilot Line activities linked to Chips Act initiatives in Finland and contributed to strategic research developments in the area of photonic integration technology, key

optoelectronics materials, quantum technology and photonics applications. In summary, Prof. Guina will bring a unique combination of expertise over a vast technical domain, a long experience in terms of European networking with academia and industry, and a good balance between aca-demic and entrepreneurial perspective. Additional information on his back-ground can be fined in his CV (enclose with the letter) and the website of his group: https://research.tuni.fi/orc/

CURRICULUM VITAE ***Mircea GUINA***

- **PERSONAL INFORMATION**

Family name, First name: GUINA, Mircea
ORCID: 0000-0002-9317-8187; Research ID: F-4183-2014
Date of birth: 15/12/1972
Nationality: Romanian, Finnish
E-mail: mircea.guina@tuni.fi
Web site: https://research.tuni.fi/orc/

- **EDUCATION**

2002 PhD in Physics (laser technology) – graduated on 11.12.2002
Faculty of Physics, Tampere University of Technology, Finland
1997 Master in Photonics, University POLITEHNICA of Bucharest, Romania

- **EMPLOYMENT TRACK**

2008 – Professor, Tampere University (Tampere University of Technology until 2018)
2005 – 2008 Senior researcher, Optoelectronics Research Centre, Tampere University of Technology
2003 – 2005 Postdoc, Optoelectronics Research Centre, Tampere University of Technology
1999 – 2002 Post-grad student, Optoelectronics Research Centre, Tampere University of Technology
1997 – 1999 Teaching assistant (optoelectronics), University POLITEHNICA of Bucharest, Romania

- **MAJOR FUNDING**

Since 2010, the estimated project funding as PI is more than 13.5 M€, covering 4 H2020 projects funded by the European Commission, 6 projects funded by the Academy of Finland, 4 by the European Space Agency, and 8 by the Finnish Funding Agency for Innovation. Grantee of an ERC Advanced Grant (AMETIST, 2017-2022; 2.5 M€). Key contributor to several large ecosystem projects, including PRAIN Flagship program.

- **SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

2008 – 2023 Supervisor of more than **25 postgraduate students**: 21 theses completed, 5 to be completed during 2023/2025; Supervisor of 14-16 postdoctoral researchers.

- **TEACHING ACTIVITIES**

2020 – Optoelectronics Technology and Devices, undergraduate & postgraduate, one period, 5 c.u.
2020 – Applications of Lasers, shared responsibility, undergrad. & postgraduate, one period, 5 c.u.
2019 – Physics of Optoelectronics, undergraduate & postgraduate, one period, 5 c.u.
2014 – 2018 Responsible for a postgraduate course on "Basic Semiconductor Technology".
2001 – 2013 Photonics and Optical Communications, lectures and seminars
1997 – 1999 Laboratory and exercises sessions in Optoelectronics, University Politehnica of Bucharest

- **AWARDS AND FELLOWSHIPS**

2023 Innovation Professor of Year 2023, the leading Finnish award for academic innovation
2018 Optica (OSA) Fellow, SPIE Fellow
2015/11 "Distinguished Researcher" prize awarded by Finnish Industrial Research Fund
2015/02 "Excellence in Research prize", 50 000 € grant awarded with the occasion of the 50th anniversary of the Tampere University of Technology
2014 International visiting professor fellowship, CAPES Foundation, Brazil

- **ORGANISATION OF SCIENTIFIC MEETINGS**

2023 Program Chair, *"Advances in 3OM"*, SPIE Conference 2023, Timisoara, Romania
2022 Chair of the *"11th VECSELs Conference"*, SPIE Photonics West 2022, San Francisco, USA
2016/2018 Co-chair of the "Conference on Infrared Technology and Applications", OTA, Beijing
2015 Chair of the *"5th VECSELs Conference"*, SPIE Photonics West 2015, San Francisco, USA
2013 Chair and organizer of the "*17th European MBE Workshop*", Euro-MBE, Levy, Finland
2012 Co-organizer of a COST Workshop "*Site Controlled Epitaxy*", Greece
2001 – *Founder and Director* of the Markus Pessa International Summer School "*New Frontiers in Optical Technologies*" (2001/2003/2005/2007/2009/2011/2013/2015/2017/2019/2023).

- **COMMISSIONS OF TRUST**

2015 – 2021 Topical Editor, Optics Letters, OSA
2015 – 2021 Topical Editor, Journal of the European Optical Society, EOS
2016 – 2023 Chairman of the Academic Advisory Board of *Photonics Finland*
2011 – 2013 Chairman and Grant Holder of the COST Action MP0805

As member of conference boards (more than 30 international committees; recent selection given)

2023/2024	Chairman of the European sub-committee, International Semiconductor Laser Conference.
2021	Topic Chair, European Microelectronics and Packaging Conference (EMPC 2021)
2021	Program committee member ECOC 2020, September 2021, Bordeaux
2020	Program committee of the IEEE International Semiconductor Laser Conference (ISLC 2021)
2020	Program committee member ECOC 2020, December 2020, Brussels
2019	Program committee member (semiconductor lasers), CLEO/Europe IQEC 2019, Germany
2018	Program committee member ECOC 2018, 23-17 September, Rome
2018	Permanent member of the International Advisory Board, International MBE Conference
2017	Program committee member ECOC, 18-20 September, Gothenburg
2017	Program committee member (semiconductor lasers), CLEO/Europe IQEC 2017
2015	Permanent member of the Scientific Board of the European MBE Workshop

Reviewer of large projects and PhD theses

2021	Opponent PhD thesis at LAAS-CNRS, Toulouse, France
2020	Opponent PhD thesis at Institut d'Optique, Paris, France
2019/'17/'15	External reviewer for European Research Council Executive Agency (ERC grants)
2019	Opponent PhD thesis at Rennes University, France
2018/2014	Opponent of two PhD thesis at ETH Zurich, Switzerland
2017	Member of the evaluation panel, Swedish Foundation for Strategic Research
2017/2016	Evaluator for the "Agence Nationale de la Recherche", France
2017/2015	Evaluator for National Science Centre Poland and Swiss Science Foundation
2014	Opponent of a PhD thesis at Oulu University, Finland
2012	Opponent of a PhD thesis at Chalmers University of Technology, Sweden
Since 2009	External reviewer of 8 PhD theses at Aalto Univ., Univ. of Turku, and Oulu Univ.

Other commissions of trust

2018 – 2022	Member of Photonics21 Board of Stakeholder, representing Tampere University
2017 –	Chairman & CSO at *Vexlum Oy*
2015 –	Chairman & CSO at *Picophotonics Oy*
2005 –	Chairman at *RefleKron Oy*

- **SUMMARY OF THE MAIN SCIENTIFIC ACTIVITIES AND PUBLICATIONS**
  - ✓ Over 260 refereed journal articles, *h-index* = 34 WoS
  - ✓ More than 300 papers in international conference proceedings
  - ✓ More than 35 invited talks at international conferences (e.g. Photonics West, CLEO, MRS, EuroMBE)
  - ✓ Frequently invited for seminars at leading photonics research laboratories (mainly in Europe)
  - ✓ Author of 9 book chapters, 5 granted patents, and several patent applications.

- **MAJOR RESEARCH CONTRIBUTIONS**

High-power laser technology and applications
- ✓ Pioneering work on *cw GaInNAs*-based VECSELs at 1.2/1.5 µm
- ✓ Pioneering work on high-power yellow-orange VECSELs
- ✓ Demonstration of the first ultrafast GaAs quantum-well VECSEL at visible wavelengths
- ✓ Demonstration of the first ultrafast GaSb VECSEL at 2 µm
- ✓ Development of VECSEL-based yellow laser system for dermatology (with clinical trials)

Optoelectronic devices and nanostructures
- ✓ First demonstration of a 2.6 µm GaSb/Si hybrid lasers tuneable with a silicon-photonics chip
- ✓ First demonstration of 1.3 µm GaInNAs quantum well laser diode grown on Ge substrate
- ✓ Leading results on broadband GaSb-based superluminescent diodes at >2 µm
- ✓ Pioneering work on nonlinear dynamics of 2 µm GaSb SESAMs (mode-locking of new types of lasers)
- ✓ Leading results on multijunction monolithic solar cells based on GaInNAsSb

Fundamentals of epitaxy
- ✓ Understanding on growth dynamics in MBE of GaInNAsSb alloys (leading European competence)
- ✓ Fundamental experiments concerning epitaxy of GaAsBi and GaSbBi alloys.