To Photonics21 Secretariat
via eMail: secretariat@photonics21.org

Dear Photonics21 Secretariat,

We herewith submit the nomination of the following Photonics21 Board of Stakeholders candidate RWTH Aachen University / Arnold Gillner.

- Letter of Nomination -
Photonics21 Board of Stakeholders
Election 2025

Photonics21 Board of Stakeholders - Letter of Nomination

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

   RWTH Aachen University, Chair for Laser Technology

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).)*

   RWTH Aachen University
   Chair for Laser Technology
   Steinbachstrasse 15
   52074 Aachen
   Germany

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

   Prof. Dr.-Ing. Arnold Gillner

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]

The Chair of Laser Technology (LLT) at the RWTH Aachen University conducts research and teaching in the field of radiation generation and application from infrared to X-ray ranges. The framework is provided by European and publicly funded projects as well as industrial research and development projects. Currently the LLT is working on Quantum Technology, Sensor Technology, High Power ultrafast Laser applications, robot based laser systems and laser based melting processes, like welding, cutting, drilling and additive manufacturing. The main focus of the LLT is basic research from laser-material interaction, optical modulation in time and space and systems engineering. In the field of laser and radiation sources the LLT is working on a wide variety of wavelengths from deep UV to infrared. Coherent and incoherent radiation sources of the highest intensity are required for new applications of laser technology. For example, X-ray sources are being developed for use in X-ray microscopy and X-ray lithography.

The aim of adapting optical peripheral components such as mirrors and lenses is to improve service life, radiation resistance, and optical properties in the high-power range. Freely formable, non-rotationally symmetric optics, for example, enable problem-oriented adaptation of the beam geometry to the machining processes.

[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.

In Laser material processing the LLT is using the latest analytical instruments like pump-probe systems for understanding the interaction of ultrashort pulses in the ps- and fs-range with materials. Similar to the ablation and drilling investigations the LLT is working on process understanding and process optimization using synchrotron x-ray radiation at DESY and other places. Together with other universities the LLT has formed a large research activity "Laser meets Synchrotron" to allow a deeper understanding of laser based manufacturing processes. These analytical activities are underpinned by numerical simulations of the laser processes to allow process optimization and failure compensation.

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

Prof. Dr. Arnold Gillner studied Physics at the University of Darmstadt and made his PHD in Mechanical Engineering at the RWTH Aachen in 1994.

In 1985 he was one of the founding and starting scientists of the Fraunhofer Institute of Laser Technology in Aachen, Germany. Since then, he was working on Laser based manufacturing Technologies, like surface treatment, welding, cutting, drilling and system technology.

Starting in 1992 he strongly developed the activities and the department for Micro Technology at the ILT and since 2010 he was heading the department of Ablation and Joining. Together with more than 65 scientists in his department he was developing industrial laser processes for macro and micro joining, packaging, micro and nano structuring, polymer applications and Life Science applications.

In parallel to his former position at Fraunhofer ILT he is Member of the RWTH and gives lectures on Lasers in Life Science and Lasers in Micro- and Nanotechnology. Moreover he is leading an group of scientists in the field of laser processes with melt interaction. In this position he is working on basic science related to laser manufacturing processes, considering new methos of beam shaping and analytical instruments. Especially the use of high brilliant x-ray-sources from synchrotrons like DESY give deep insight into laser interaction and the related process answer in laser based manufacturing processes.

In his scientific field he is coordinating numerous national and European R&D-projects on welding, cutting, micro ablation, drilling, process control and biofabrication.

In the Photonics21 platform Arnold Gillner is an active member in the manufacturing working group and together with the head of the working group he has been leading numerous working group meetings for roadmap and future topic definition. He is currently active in writing the strategic agenda and preparing new funding topics for Horizon Europe program.

In the Photonics21 Board of Stakeholders Dr. Arnold Gillner will actively contribute and work to strengthen the leading role of Photonics Industry in Europe.