

Postdoctoral Vacancy Notice

Job Title

Postdoc in high-power semiconductor laser technologies.

Job summary

Norlase is looking for a Post-Doc to strengthen our R&D efforts in tapered laser based systems. The primary goals will be to increase the stability and reduce the sensitivity of the system. One expected result is improved pulsing capabilities of Norlase's proprietary semi-conductor diode based laser. This development is key to laser medical applications.

Qualifications

As an applicant for this Postdoc position, you must have a Ph.D. degree in lasers physics or technology. You have a strong experimental background in high power semiconductor lasers, backed with a good theoretical understanding. Preferably, you have knowledge of designing, building, measuring and characterizing optical components and systems. A detailed, in-depth knowledge regarding tapered diode lasers would be very relevant, since these components are at the core of the Norlase technology.

Job description

Norlase is a spin-out company from the Technical University of Denmark (DTU) set up to develop and commercialize so-called tapered diode doubled lasers (TDDL). TDDL is a new class of compact, stable, low-noise visible lasers at watt-level output powers. It provides designers of OEM equipment unique opportunities in terms of performance and cost effectiveness. The technology is based on frequency-doubling of infra-red, tapered lasers. We are a young, fast-growing high-tech start-up, with backing from successful photonics entrepreneurs, industry veterans and VC investors. Our customers include industry-leaders within laser imaging- and medical systems. In Norlase, we believe in breaking down the barriers of technology through simplification. Our mission is to make high power visible lasers truly convenient.

Norlase is closely related to the European academic research community. Our company was co-founded by a group of professors and senior researchers at the DTU Department of Photonics and is still situated within the university campus. Norlase employs an industrial Ph.D. student in collaboration with DTU and has close strategic partnerships with research institutions such as the Ferdinand-Braun-Institut in Berlin.

We now face a re-design of our main product line, the AuroraOne laser head, and are therefore expanding our team of technical experts. Our current R&D team is oriented towards the frequency-doubling scheme and electronic control of the system and we now need to add competencies specifically within the high-power semiconductor laser at the core of the system. This will be critical to realizing a more stable system that can be pulsed to meet the requirements of medical applications.

Norlase has demonstrated that pulsing at the micro-second level is feasible with our proprietary technology. However, modulation at that level changes the temporal dynamics of the entire laser system and may strongly influence feedback to the tapered diode. In order to achieve such operation in a stable manner, we need to combine our system knowledge, with knowledge of the properties of the tapered diode itself, at the very basic material level. One concrete goal of the candidate is to demonstrate micro-pulsing, satisfying customer demand, at prototype level by the end of the project. Specifically, the job will be dedicated to achieving the following developments within a 12-month timeframe:

- (i) Participate in the re-design of the Norlase laser head as the semiconductor laser expert.

- (ii) Understand, develop and implement a novel micro-pulsing scheme for our TDDL laser technology.
- (iii) Demonstrate the business potential to the Norlase product portfolio by building a micro-pulsing breadboard prototype.

We call this project MILAS (MIcro-pulsed, diode-based LASer). The project has been funded under the EU H2020 Innovation Associate program, which rewards Postdoctoral positions with extraordinary academic and industrial potential. The chosen candidate will become a member of the R&D team and will report directly to CTO Danny Noordegraaf.

The position will have a strong academic profile and will be supported directly by the Technical University of Denmark (DTU). Prof. Peter E. Andersen will take the role of academic advisor, to ensure high academic outcome. You will be working closely together with Norlase's industrial P.hd. student. The position is scheduled to include two short-term research stays at renowned European research institutes, such as the Ferdinand-Bruan-Institut. The work is expected to result in several scientific publications and success in micro-pulsing of the TDDL technology would be a major scientific and industrial achievement.

CTO Danny Noordegraaf and Prof. Peter E. Andersen, together with the company CEO Peter M. W. Skovgaard, will form the project board. The position offers a unique opportunity to combine cutting-edge industrial-, academic- and entrepreneurial practice - all while making a key difference in driving forward the next generation of laser technology.

While the MILAS project is limited to 12 months, there is a definite opportunity for long-term employment in Norlase following the project. The candidate must be from another country than Denmark and is expected to relocate to Denmark for the duration of the project. Relocation cost support will be provided by Norlase and the European Commission.

Other requirements

- The required profile of the applicant must at least have reached R2 level in the European Framework for Research Careers. This means he or she must:
 - **Hold a PhD (or equivalent);**
 - **Have demonstrated expertise** in line with the job advertisement;
- **The profile must comply with the Transnational mobility criteria:** the researcher must come from a different country than Denmark (irrespective of his/her nationality). This means that at the time of recruitment (September 2017), researchers must have resided or carried out their main activity (work, studies, etc.) in Denmark for no more than 12 months in the 3 years immediately before the reference date (from 01/09/2014 until 31/08/2017). Compulsory national service and/or short stays such as holidays are not taken into account.
- **The profile must have full professional proficiency in English, both written and spoken.**

Starting date

The starting date is September 1st 2017.

Application procedure

Please send your application containing your resume and letter of motivation to:

CEO Peter M. W. Skovgaard, at e-mail pmws@norlase.com

Application deadline: May 15th 2017.