PhD student in optoacoustic light source development (f/m/d)

Are you passionate about science, full of ideas and innovative potential and eager to develop emerging technologies for biology, healthcare and environmental applications? Then the Chair of Biological Imaging (CBI) at the Technical University of Munich (TUM) and the Institute of Biological and Medical Imaging (IBMI) at the Helmholtz Zentrum München (HMGU) are the ideal environment for you! Headed by Prof. Vasilis Ntziachristos, CBI scientists develop next-generation imaging and sensing methods to measure previously inaccessible properties of living systems, catalyzing breakthroughs in biology, medicine, and environmental monitoring.

CBI is the cornerstone of a rapidly expanding bioengineering ecosystem in the Munich science area; including the Research Center TranslaTUM and the Helmholtz Pioneer Campus, which integrate bioengineering with oncology and metabolic disorders, respectively. Comprising 10 inter-disciplinary laboratories and scientists from more than 25 countries, CBI offers state-of-the-art infrastructure for innovative research and a perfect environment to accelerate your career. Our research aims at revolutionizing biological discovery and clinical translation to address major health challenges of our time and develop the medical solutions of tomorrow.

Join our team and be part of our rich and dynamic research culture of enquiry and innovation. CBI researchers come from the top ranks of physics, engineering, chemistry, biomedicine and computer science and our pipeline frequently yields high-impact papers, successful technology spin-offs and commercialization. Our research is regularly featured in major news channels and has received broad recognition including several prestigious awards and considerable research funding from national and international sources.

We are now recruiting a highly qualified and motivated PhD student (f/m/d) to develop novel compact light source systems for optoacoustic imaging.

The mission:

Multispectral optoacoustic imaging and sensing combine high contrast of optical excitation with high resolution and deep penetration of ultrasound. These characteristics give optoacoustic imaging a competitive edge over other imaging modalities for applications in biology, medicine, environmental sensing and pollution monitoring. This project will focus on breakthroughs in semiconductor laser-based illumination technologies to create low-cost, portable light sources for clinical applications. The successful candidate will develop and prototype new approaches for pulsed laser-diode driving electronics and photonic circuits for miniaturized illumination sources for optoacoustic clinical applications such as new hybrid endoscopic imaging systems. The development process will strengthen your skills in opto-electronics, lasers, optics, prototyping and computation. You will be involved with every stage of device design, prototyping and testing, as well as with dissemination of results in form of publications and, if appropriate, patents.
Your qualifications:

The successful applicant must have the following:

- A degree in Optoelectronics, Physics, Optics, Engineering or a related field.
- Master Degree in Electronics or optoelectronic engineering or closely related field(s) would be advantageous.
- An excellent academic track record.
- Experience in designing and implementing electronic circuits (analog filters, amplifiers, optoelectronic drivers)
- Good command of circuit design software (Altium CircuitMaker, Eagle, Proteus, PSpice, etc.).
- Good command of hardware control, data analysis and acquisition software (Matlab, LabView).
- High motivation, scientific curiosity and ability to drive projects independently.
- Team player skills and enthusiasm to work in an international, multi-disciplinary, collaborative and fast-paced environment.
- Effective written and oral communication.
- Excellent command of the English language.

The following is considered advantageous:

- Good understanding of high speed electronics impedance matching and distributed circuit design.
- Good understanding of semiconductor laser physics.
- Familiarity using laboratory devices such as optical test equipment, oscilloscopes, spectrum analyzers, function generators.
- Assemble and align precision opto-mechanical systems.
- Experience using Solid Works or similar 2D and 3D CAD modeling.
- Previous experience in experimental Research.
- Basic knowledge of optoacoustic imaging.

Our offer:

We offer you the unique chance to make a difference in future healthcare. At CBI, we strongly believe in scientific excellence and innovation. This is your opportunity to be part of and to advance your career in a world-leading research institute, where bioengineering principles meet today’s challenges in biology, medicine and the environment to develop the solutions of tomorrow.

CBI provides a highly international, multi-disciplinary environment with excellent opportunities for professional growth. You will be part of a dynamic, professional and highly motivated team within a stimulating environment and gain international exposure through our partners and collaborators across Europe. TUM offers a wide variety of inspiring and challenging PhD programs, which will supplement your research training with outstanding opportunities for career development, continued education and life-long learning.

Situated on the foothills of the Alps, Munich is consistently ranked as one of the most vibrant and enjoyable cities in the world, with an exceptionally quality of life. Greater Munich is also home to several world-class universities and research institutes, creating a truly inspiring intellectual atmosphere.
The successful applicant will initially have a 3-year contract, with the possibility of extension. Salary will be commensurate with work experience and seniority (TV-L E13-65%). As an equal opportunity and affirmative action employer, TUM explicitly encourages applications from women as well as from all others who would bring additional diversity dimensions to the university’s research and teaching strategies. Preference will be given to disabled candidates with essentially the same qualifications.

Your application:

We are looking forward to receiving your comprehensive application including your letter of motivation, CV and academic transcripts of records preferably in English and in a single PDF file, via email to cbi.recruitment@tum.de. Please indicate “PhD student in optoacoustic light source development” in the subject line.

For any question, please contact:

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