



GRINTECH GmbH

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#### Job Advertisement

The GRINTECH GmbH, a micro-optics company in Jena, was established as a spin-off from the Fraunhofer Institute IOF in the year 2000 and employs currently 36 researchers, engineers and technicians.

GRINTECH develops and produces micro-optical systems, in many cases using gradient-index microlenses with plane optical surfaces. Due to this, different plane optical components as GRIN lenses, fibers, prisms and beam splitters can be combined to very compact micro-optic imaging systems. Preferred applications are in the field of endomicroscopic imaging applications, in conventional miniaturized endoscopy as well as in displacement sensors in the field of optical metrology.

GRINTECH offers within the European Doctorate Training Network PHAST: Photonics for Healthcare: multiscAle cancer diagnosis and Therapy (Marie Skłodowska-Curie Innovative Training Network (MSCA-ITN-EID) of the European Commission) the position (100%) of an

#### Early Stage Researcher (PhD candidate) (f/m/d)

in the field of Optical Spectroscopy / Imaging / Microscopy with the research topic

“Micro-optical imaging system for multimodal non-linear endospectroscopy” in the context of Multimodal nonlinear imaging for clinical diagnosis in combination with laser ablation for selective tissue removal

The position should be filled as soon as possible. Funding of the position is available for 3 years and comprises an attractive training curriculum with international partners.

#### Objectives of the research project:

PHAST will systematically evaluate various multimodal microscopic and endomicroscopic strategies with respect to achieving a real-time diagnosis of various cancer pathologies (OCT, SHG, TPEF, CARS). This involves the combination of new laser technologies, with novel micro-optic imaging systems (based on gradient-index micro-lenses) and advanced algorithms for real time image analysis.

The transformation from a multimodal surgery microscope to a multimodal endoscope involves innovative fibre concepts, which will be also researched. The specific detection of malignant tissue during curative surgery is the most important precondition for complete tumour removal. Therefore, multimodal imaging will be further extended by selective laser tissue ablation.

The ESR 8 project will focus on the conception, optical and mechanical design of micro-optical modules for multimodal endomicroscopy and spectroscopy. Beside this, the studies will include optical qualification of the developed micro-optical components by confocal imaging tests, interferometry, Shack-Hartmann sensors, and assembly technologies of the micro-optical imaging systems and their optical qualification close or in the final application. Assisting partners will be Leibniz-IPHT and Medical University Vienna in the final implementation of clinically usable endomicroscopic and spectroscopic probes, where secondments are planned.

Be part of the European Industrial Doctorate Network PHAST:

PHAST provides high level training to educate the next generation of researchers who can actively advance imaging technology for medical application. The ESRs (PhD students) will be trained to all the technologies through hands-on laboratory platforms, thematic workshops and courses to build solid careers as biophotonics professionals in both academic and nonacademic sectors.

This will be possible thanks to the multidisciplinary environment created by the PHAST consortium, composed of research institutions, 2 hospitals and 8 industries from 7 European Countries, among them specialized small companies as well as global players in the field such as Horiba, Philips and Zeiss.

Requirements:

We seek an excellent, open-minded and team-spirited PhD candidate with a background in optics/photonics, physics, spectroscopy, imaging, or similar. The successful candidate should have good knowledge and interest in both experimental and theoretical work, a demonstrated knowledge of at least two of the following: optical design / optical spectroscopy / microscopy and their application in biomedicine, laser physics, nonlinear optics, electronics, technical programming language (Labview, Python or R), or image analysis. Interest in interdisciplinary research in the field of biophotonics, in particular microscopy, spectroscopy/imaging and data analysis is expected. Fluent communication skills in English, both spoken and written are required. Candidates will be required to meet the Marie Skłodowska-Curie Early-Stage Researcher eligibility criteria: (<http://ec.europa.eu/research/mariecurieactions/>). In particular, at the time of appointment candidates must have had less than four years full-time equivalent research experience and must not have already obtained a PhD. Additionally, they must not have resided in Germany for more than 12 months in the three years immediately before the appointment.

We offer:

The successful candidate will be part of an excellent international research team and benefit from the scientific and complementary training programme of the EU-funded Innovative Training Network (ITN) PHAST. We offer highly competitive and attractive salaries according to regulations of Marie Skłodowska-Curie Actions, plus mobility and family allowances as applicable.

Informal enquiries may be addressed to Dr. Bernhard Messerschmidt ([messerschmidt@grintech.de](mailto:messerschmidt@grintech.de))

The application must be accompanied with the following documents in PDF format:

- letter of motivation,
- curriculum vitae of at most 3 pages,
- transcripts of records from University/University College and copy of your degree
- list of publications (if available),
- two written recommendation letters (e.g. one by your Master thesis supervisor) and the referees contact details

Please send your application electronically as pdf file via mail until 31th December 2020 to:

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