

Project: *[PHAICELL] Coherent quantitative phase microscopy: revisiting the basics and proposing novel numerical reconstruction methods with applications for advanced label-free bio-imaging*

Principal Investigator: dr. Maciej Trusiak

Position in the Project: PhD student in the Faculty of Mechatronics, Warsaw University of Technology.

Institution: Photonics Engineering Division, Institute of Micromechanics and Photonics, Faculty of Mechatronics, Warsaw University of Technology.

Requirements:

1. Master degree in Physics, Optics, Computer Sciences or Engineering.
2. Very good knowledge of Matlab, Python and C++ environments. Algorithmic background in optical information processing and applied optics.
2. Experience in coherent full-field optical measurement (holography, interferometry), microscopy and fringe pattern analysis.
3. Fluent spoken and written English.
4. Strong motivation and passion for scientific work (theoretical, numerical and experimental) both independently and as part of a team in an interdisciplinary environment, with the ability to creatively propose solutions to problems at hand, pay close attention to detail and to meet deadlines.
5. Very good social skills.
6. Experience in dissemination of research results to the scientific community, writing grant proposals and establishing/participating in international cooperation.

General description of responsibilities:

The project aims at investigating the limits of the quantitative phase imaging, pushing them via novel phase demodulation algorithm, and proposing new applications for biomedical imaging of live specimen. PhD Student will be responsible mainly for

- working closely with biological collaborators on sample preparation and investigation;
- developing experimental protocols for studying the samples in WUTscope 2.0 with coherence modulated light source and new numerical framework for phase reconstruction;
- investigating the effects of altering spatiotemporal coherence on quantitative phase imaging accuracy;
- developing a paradigm shift in phase reconstruction: integrating phase from instantaneous frequency map calculated via 2D fast and adaptive local iterative filtering approach;
- developing and investigating novel applications enabled through augmented space bandwidth product and signal to noise ratio phase imaging through examination of challenging bio-samples in cooperation with The Arctic University of Norway (prof. Balpreet Ahluwalia group), the Mossakowski Medical Research Center Polish Academy of Sciences (prof. Barbara Łukomska group) and the University of Valencia (prof. Vicente Mico group).

A successful dissemination of results to the scientific community is expected. Moreover, co-supervising Master students will be required. Establishing and expanding international cooperation within the project will be most welcome.

What we offer:

1. Scholarship contract and competitive remuneration package.
2. Work in dynamic and competent scientific group with excellent research environment and international cooperation promoting publications in high impact journals.
3. Financial support of abroad scientific visits and attending conferences.
4. Encouragement and support in preparing grant applications.

Type of NCN Project: OPUS19 – ST.

Application deadline: 08.03.2021, 16:00. Results available on 10.03.2021.

Please submit the following documents to: maciej.trusiak@pw.edu.pl

Conditions of employment:

PhD scholarship: 4000 PLN/month (net salary), stipend contract for 36 months.

Preferred time of starting position: 1st April 2021.

Additional information required:

Motivation letter (in English).

CV (in English).

Master thesis.

Contact details of the scientific supervisor and other referees (if available).

To apply, please send your application, including motivation letter, CV with the list of your publications and achievements, Master degree thesis alongside with contact information to the scientific supervisor and other referees (if available) to the following e-mail address: maciej.trusiak@pw.edu.pl until the 08.03.2021. Incomplete applications will not be considered.

We thank all applicants for their interest, however, only selected candidates may be invited for an interview. Applications will be accepted until the position is filled. If the winner of the competition resigns from signing the contract, we reserve the right to choose the next best person from the ranking list.

Due to the entry into force of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, all candidates are requested to provide consent to the processing of his or her personal data by the institution which carries out the recruitment process.

Thus, please include in your application the following statement: "I hereby agree to the processing of my data included in the application documents by Warsaw University of Technology, Warsaw, Poland, to carry out the recruitment process."

Your personal data is processed on the basis of the Article 6 Part 1 Points (c) and (f) of the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR; Official Journal of the European Union L 119/1).