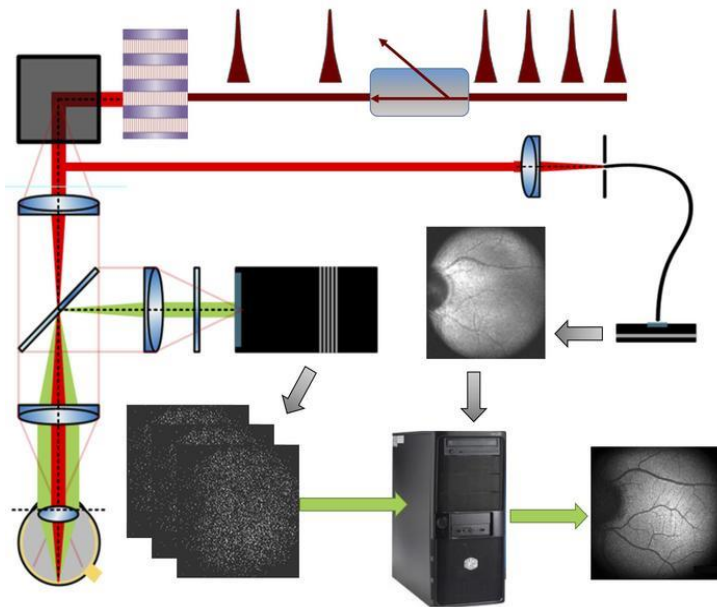


SUMMER INTERNSHIP / PAID TRAINEESHIP in the INTERNATIONAL CENTRE FOR TRANSLATIONAL EYE RESEARCH (ICTER)

PROJECT DESCRIPTION:

In ICTER we are working on novel method of eye fundus (retina) imaging which use a two-photon absorption of a laser light. The measurements are non-invasive and safe (there is no contact of the patient's eye with the measurement setup, used laser radiation is below the maximum exposure limit of the laser light for the human eye). Using the two-photon absorption is necessary as eye (in fact mainly cornea) absorbs and scatters blue light, which is normally absorbed by the photosensitive cells responsible for the vision process. Thus just small amount of light reach the retina and enable imaging – using two-photon phenomena (we use near-infrared light for which the eye is almost transparent) enables excitation of particular molecules, with good spatial resolution. The method is general, fast and robust – in dozen of minutes we can register the fundus of the eye. Previous experiments made on mice models have confirmed the validity of the method, but the current challenge are the measurements on humans, realized in our group. The next step is a trial of correlation of the registered images with different retinal diseases in such a way that based on the measurement results provide early diagnosis and choose the most promising direction of treatment.



TASK: For the method to be used in an ophthalmologic office, we need a precise and repeatable eye positioning in front of the scanning laser beam. One of the most important part is so-called *fixation system* – one eye is measure while another follows the light spot. Due to the optometric reflex movements of both eyes are synchronized. We plan to expand the current fixation system to enable the steering via microcontroler the position of the light spot and additionally without optical lens therein (thanks to 3D printed elements). Thanks to the above, the eye positioning will be more reliable and patient's measurement faster.

Experimental setup scheme, details: [J. Clin. Invest **132**, 154218 (2022)]

More information about realizing projects you can find on our website: <https://icter.pl>

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Visit our website:
icter.pl

PLACE: International Centre for Translational Eye Research, Institute of Physical Chemistry PAS, Skierniewicka 10A, 01-230 Warsaw

DURATION: minimum 1 month (with a possibility of extension) in August and September 2022

REMUNERATION: net salary of 1500-2000 PLN, depending on skills and experience

BENEFITS:

- working on interesting, innovative project developing in our group since 2014
- possibility of making a part of the setup used for experiments on human eye
- help and individual tutoring during the whole period of an internship
- flexible working hours in a young, dynamic research team
- access to all needed optical, electrical, etc. elements and tools
- possible continuation of work as a topic of a bachelor/engineering/master thesis

REQUIREMENTS:

- graduated at least 2nd year of undergraduate studies in one of the following disciplines:
- physics, optoelectronics, photonics, electronics, robotics, automatics, or similar
- basic programming skills, including programming microcontrollers (Arduino platform)
- experience in using projects for 3D printing, and designing in CAD system
- basic knowledge in electronics and mechanics, which enable the unsupervised work
- basic understanding of LabView programming, enabling modifications of existing scripts
- experience of working in optical laboratory/mechanical workshop is more than welcome
- availability – min. 150 hours spending in the laboratory/in front of PC in Warsaw is necessary

Fulfillment of all requirements is not obligatory – apply when you have the majority of them!

DEADLINE: applications up to 19th July 2022. Selected people will be invited for a personal meeting.

DOCUMENTS:

- short CV (max. 2 pages) including information mentioned in **requirements** section
- statement about personal data processing for realizing the recruitment process (RODO), to be downloaded from a website: <https://icter.pl/careers/>

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