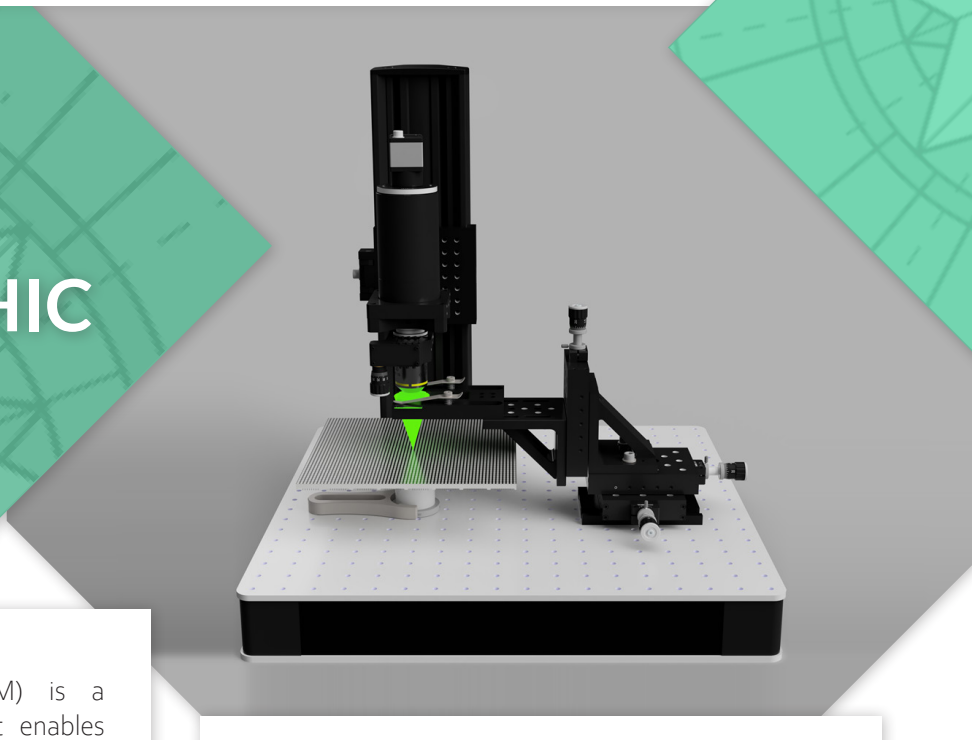
Warsaw University of Technology

EXCELLENCE INITIATIVE RESEARCH UNIVERSITY

Centre for Innovation and Technology Transfer Management
WARSAW UNIVERSITY OF TECHNOLOGY

FOURIER PTYCHOGRAPHIC MICROSCOPE

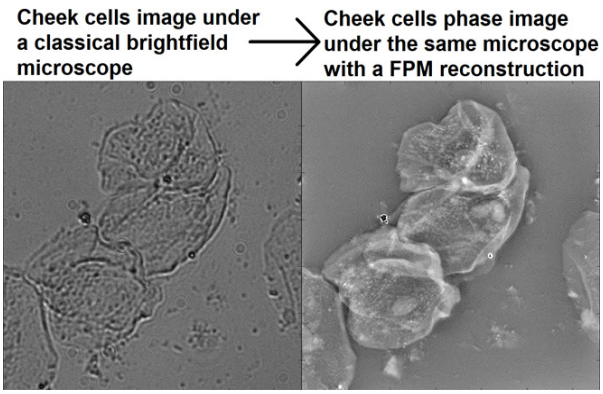


DESCRIPTION:

Fourier ptychographic microscopy (FPM) is a computational microscopy technique that enables high-resolution (below 0.5 µm) and large field of view (above 5 mm2) microscope imaging bypassing the physical restrictions imposed by the microscope objective. This technique facilitates phase contrast imaging, what allows for observing transparent samples. FPM imaging can be achieved with low-cost modifications of classical brightfield microscopes, by applying a LED array as an illumination source. FPM app is an original software for simple, fast and intuitive FPM reconstruction, making this technique accessible to non-expert users (https://github.com/MRogalski96/FPM-app).

APPLICATIONS:

- Cell culture imaging
- Digital pathology and hematology
- Electronics measurement
- Automated diagnostics



ADVANTAGES:

- Uniquely merging high-resolution and large field of view imaging
- High-contrast imaging of both: absorptive and transparent samples with the same setup
- Low-cost and easy to apply technique
- Open-source software solution (doi: 10.1093/bioinformatics/btab237)
- Easy intuitive operation by non-expert users

READINESS:

- Fully capable software
- Prototype system present in the laboratory
- Developed solutions for upgrading classical brightfield microscopes into the FPM devices

OPPORTUNITIES:

- Research cooperation
- Assist in implementing the FPM for own purposes
- On-site installation of new FPM microscope or upgrading current microscopes to FPM

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