

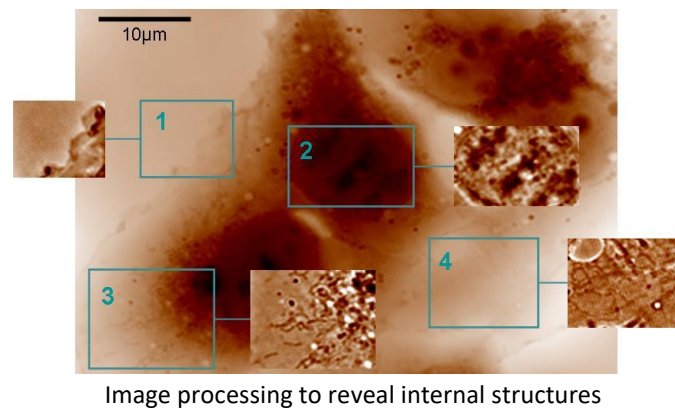
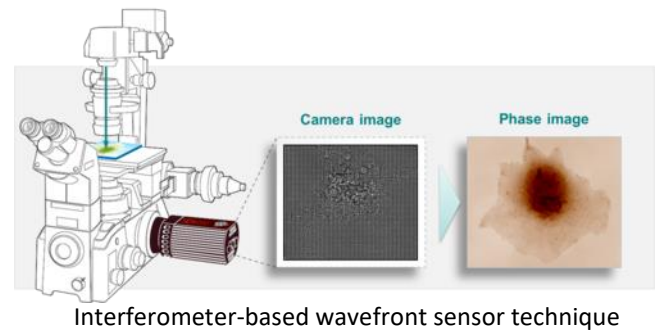
Quantitative Phase Imaging

Quantitative phase imaging by wavefront sensing microscopy

Label-free imaging method for investigating living cells, and tissues

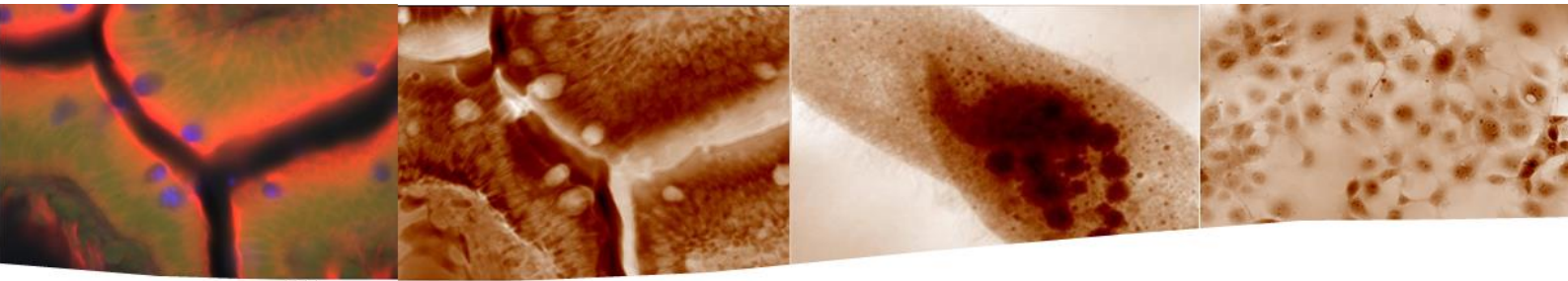
Technical specifications

- **Label-free imaging**
 - High contrast, artefact-free
 - Low phototoxicity
 - No photobleaching
 - Time-lapse microscopy during hours or days (motility, proliferation, monitoring of cell cycle, apoptosis, ...)
- **Quantitative technique**
 - Optical thickness distribution
 - Dry mass of cells
 - Cell morphology and dynamics
 - 0.2 nm sensitivity in optical thickness difference
- **Merging with fluorescence microscopy**
 - 2-stage microscope allowing simultaneous quantitative phase and fluorescence imaging modalities.
- **Reference papers**
 - P. Bon et al., "Quadriwave lateral shearing interferometry for quantitative phase microscopy of living cells", *Optics Express* 17 (15), 13080-13094 (2009).
 - P. Bon et al., Optical detection and measurement of living cell morphometric features with single-shot quantitative phase microscopy, *J. Biomed. Opt.* 17 (7), 076004 (2012)



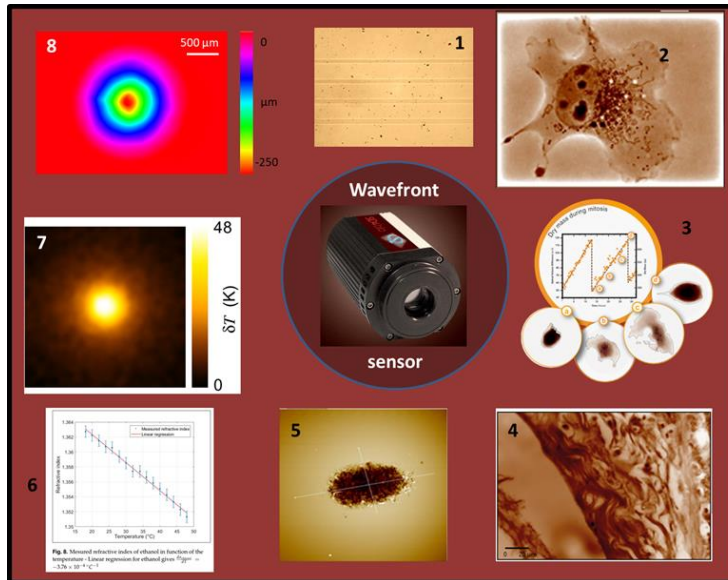
Close collaboration with Phasics for more than 10 years, allowing us to benefit from up-to-date wavefront analyzers





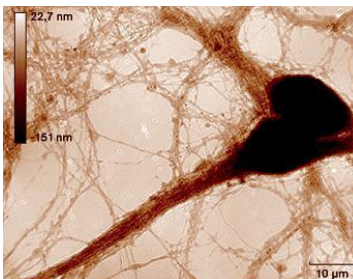
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Available measurements / examples

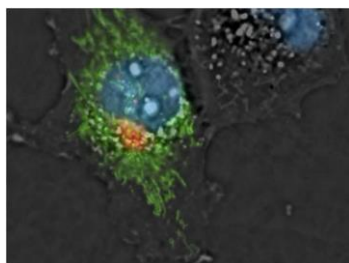


1. Embedded structures (waveguides)
2. Label-free, high contrast in living cells
3. Dry mass measurement and follow-up
4. Label-free imaging of tissues
5. Laser damage detection
6. Measurement of refractive indices of liquids
7. Local temperature in water
8. One-shot optical profilometry

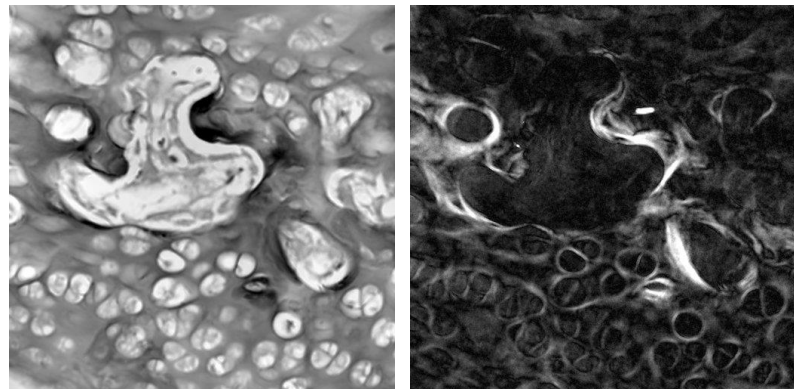
Portfolio



Live neurons in culture



Simultaneous phase/fluorescence



Phase contrast (left) and optical retardance (right) as a signature of birefringent material (here collagen) – Bone sample, $2\mu\text{m}$ thick, X40

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