

Optical Stretcher for Mechanical Characterization of Adherent Biological Cells

Technology

A new, extremely sensitive system for determining the mechanical properties of adherent biological cells by stretching with a laser and analysing with a high speed camera is offered. The device and method enables to determine the mechanical properties, e.g. viscoelastic properties, in the natural, adherent state of parts of a single cell up to whole groups of adherent cells in a spatially and temporally selective state and contactless.

Innovation

- Determining mechanical cell properties by stretching cells with light
 - without having to detach the cells from the substrate on which they are cultivated (e.g. by applying trypsin)
 - no influence by interaction of a probe with the cells
 - more sensitive and accurate than passive microrheology

Application

- R&D in life sciences and medicine
- in vitro diagnosis of diseases

Developmental Status

- laboratory setup available

Contact

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Patent Status

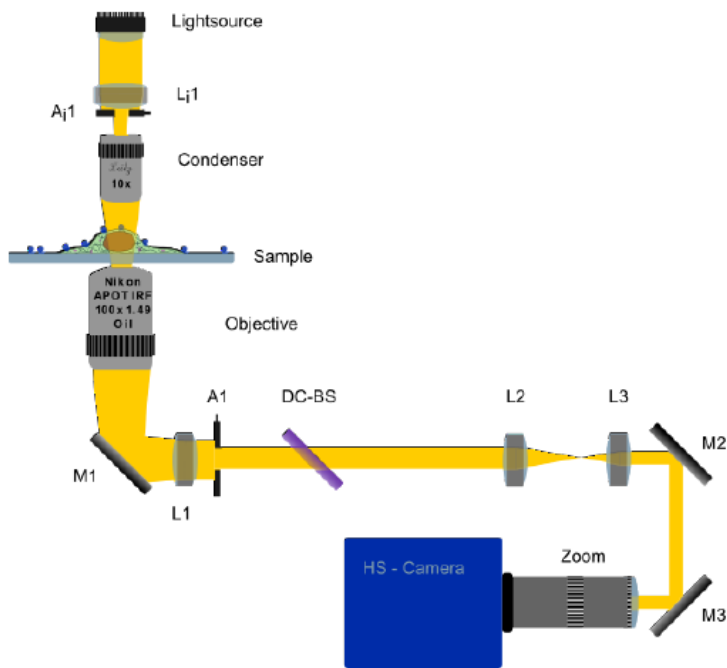
Patent applications pending

DE 10 2018 213 965.2
PCT Application filed

Reference Number

UEE20180320

Basis setup of the Detector



Detection path schematic of the setup: The sample is illuminated by a LED light-source operating in Koehler-illumination mode by lens L_{i1} , Koehler-aperture A_{i1} and the condenser. The image is formed by the objective and lens L_1 . It is further magnified by the lenses L_2 and L_3 before finally projected onto the CMOS chip of the high-speed camera by an adjustable zoom system.