Contribution ID: **18** Type: **Talk**

【9】Biophotonic micromanipulation of cells - empowering biomedicine by the force of light

Wednesday 23 August 2017 09:40 (40 minutes)

Light can hold, move and measure micro- and nano particle without touching. Thus, optical tweezers have emerged as an exciting technology which enables not only to confine microscopic particles near the focal spot of a tightly focused laser beam, but also to measure forces at the nanoscale or quantify biomechanics of single cells.
Complex tailored light field based on holographic principles allow extending this application range, making holographic optical tweezers to an extraordinary metrology tool for analysis in biomechanics and biophotonics. This way, three dimensional configurations of micro- and nano particles can be generated in parallel and dynamically modified, creating spatially selective sensors that can inspect cells in vivo in a noncontact, sterile way.
Particles as well as microsurgery tools created by soft laser lithography can also be introduced into cells to study cellular mechanics in a spatially resolved way, thus paving the way to decipher origins of cell migration and morphogenesis ,or analyze infections and inflammation.
In this presentation, we discuss how the combination of our techniques provides a versatile toolbox for optical micromanipulation of almost all kinds of micro particles. We specifically present examples of trapping cells in in vascular systems or in organisms in vivo, and of quantifying their biomechanical features.

Presenter: DENZ, Cornelia (Westfälische Wilhelms-Universität Münster)

Session Classification: Plenary Session