Method and Device for Measuring the Mechanical Properties of Biological Interfaces Using Non-Contact Microrheology

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BRIEF DESCRIPTION

Researchers at the University of California, Irvine and UCLA have developed a method and device to measure mechanical properties of biological interfaces in living cells using non-contact microrheology.

FULL DESCRIPTION

The device is a weak laser trap combined with a back focal plane displacement detection scheme both to hold a particle probe at a fixed depth below a biological interface and to measure fluctuations of the probe. The position of the particle probe is determined by back scattered light from the particle probe. Measurements of the interface may be calculated and derived from the measurements taken of the probe's activity.

ADVANTAGES

Currently to measure the visco-elastic properties of biological interfaces, researchers use small probe particles that are submerged in the biological interface. These small probe particles are manipulated with magnetic or optical tweezers to measure any displacement fluctuations caused by the manipulation of the probe particles. The problem with the current method is that the probe particle submerged in the interface causes perturbations that do not normally occur in the interface and this may result in the inaccurate measurements.

This new method and device overcomes this problem by measuring the mechanical properties of a biological interface indirectly since the probe is no longer embedded in the biological interface.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,494,505	11/15/2016	2013-229

STATE OF DEVELOPMENT

This method has been demonstrated with an air/water interface.

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OTHER INFORMATION

KEYWORDS

Interface, Microrheology, Interfacial

CATEGORIZED AS

- » **Imaging**
  - » Other
- » **Research Tools**
  - » Other
- » **Sensors & Instrumentation**
  - » Physical Measurement
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