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AFM-Coupled Microscale Radiofrequency Probe for Magnetic Resonance Imaging Spectroscopy

A new imaging method couples precise atomic force microscopy with magnetic resonance to provide nanoscale structural and chemical information for living single-cell biological materials.

Currently, nanoscale imaging methods are limited due to the inability to investigate structural and chemical information at the single cell level. While there are imaging techniques that can be used for determining nanoscale structural information, these techniques are unsuitable for applications with living biological materials.

Researchers at Purdue University have developed a method for the investigation of structural and chemical information at the single cell level. This method uses a radiofrequency probe coupled with an atomic force microscopy cantilever for precise localization to areas of interest and magnetic resonance for determining nanoscale structural information. This technology couples the precision of atomic force microscopy with magnetic resonance imaging to allow for single cell imaging of living biological materials. This technology will allow researchers to gather nanoscale information on the surface and subsurface levels of individual cells.

Advantages:

-Offers precise localization to features/materials of interest

-Provides nanoscale structural information in addition to local spectroscopic information

-Suitable for investigation at the single cell level

Potential Applications:

-Medical/Healthcare

-Imaging

Technology ID

65287

Category

Materials Science & Nanotechnology/Nanomaterial Characterization & Imaging Tools
Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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Intellectual Property:

Provisional-Patent, 2011-10-10, United States | PCT-Patent, 2012-10-10, WO | NATL-Patent, 2012-10-10, European Patent | NATL-Patent, 2014-04-10, United States | CIP-Patent, 2014-11-11, United States

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