知繁业茂 | Yintrust

# A Novel Technology to Identify and Characterize Fiber Structure Using MRI

Published date: Feb. 1, 2012

## Technology description

### Summary

Characterization of fiber structure to identify damage and disease in fibrocartilage or other semi-solid fibrous tissue, e.g. tendons, meniscus, and temporomandibular disc, remains a big challenge for doctors to date. Conventional clinical methods for examining fibrous tissues involve MRI that detects free water, either absorbed into the structures or surrounding the fibrous material. Damage to a fibrous structure would appear as bright fluid now occupying the location where fiber is supposed to be. It does not provide significant details about the structure or the nature of the damage.
Only recently have MRI methods employing short echo times been developed to image the water associated with the fibers directly. These measurements often suffer from large intensity variations due to "magic angle" effects that are treated as image artifacts. A UC San Diego inventor has developed a method that can utilize this artifact in order to identify and characterize fibrous structures. This detailed information can potentially be used for diagnosis, treatment planning, and monitoring of damage and disease in fibrous tissue.

### Description

Inventors at UC San Diego have designed a MRI data collection scheme and post-data acquisition processing algorithms to identify and characterize the fiber structure of tendon, meniscus, fibrocartilage, and other semi-solid fibrous tissue. The dipolar anisotropy fiber imaging (DAFI) method explores a unique physical property, namely anisotropic (directional) dipolar interaction, present in the imaged nuclei of these fibrous tissues in which the intensity of MRI signal correlates with the orientation of hydrogen nuclei relative to the static magnetic field. The DAFI technology provides a valuable tool in the examination of tissues having oriented, solid-like fibrous content.

### Institution

University of California, San Diego

# 联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com