

Novel device for simultaneous magnetic resonance imaging (MRI) of soft and hard tissues

DESCRIPTION OF THE TECHNOLOGY

The CSIC has developed a new device that allows obtaining simultaneous high quality images of both soft and hard tissues, using a MRI device.

The use of magnetic resonance imaging (MRI) in the healthcare sector is highly extended as the most used method for soft tissues imaging, because it is the only known method for in-vivo high spatial resolution imaging of deep tissues while avoiding ionizing radiations. However, the imaging of hard tissues (bones, teeth, cartilage) through MRI is still an unsolved challenge.

Current devices have difficulties for obtaining hard tissues images, mostly in zones where tissues with different densities are found (such as the mouth).

This new device solves this problem through the use of magic angle spinning of spatially inhomogeneous fields techniques (MASSIF).

The key issue in MASSIF is to achieve a fast control of the spatial distribution of magnetic fields, what considerably improves the RM signal of hard tissues when the magnetic field spins around a fixed axis in the so-called magic angle.

The new device allows obtaining an accurate control of the time of the intensity and the direction of the magnetic field, needed for the MASSIF method, what allows to rotate the magnetic field with which the static object is analyzed.

MARKET APPLICATION SECTORS

Healthcare, biophysics.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- Device that allows obtaining high-quality simultaneous images of soft and hard tissues using MRI techniques.
- Significantly improves current MRI devices.
- The device does not use ionizing radiation that can harm the tissues.
- It provides highly detailed information of the tissues of interest to the doctors.

CURRENT STATE OF DEVELOPMENT

PCT application filed.

COLLABORATION SOUGHT

Companies interested in the license of the patent for development and use of the device are being sought.

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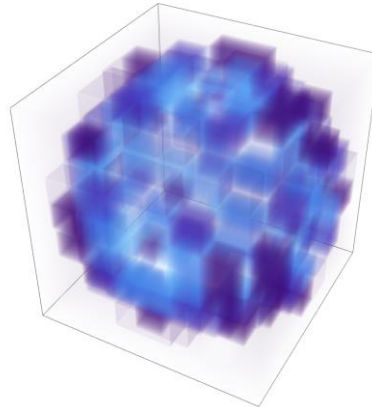


Image 1. Image reconstructed using the device developed by CSIC-UPV.

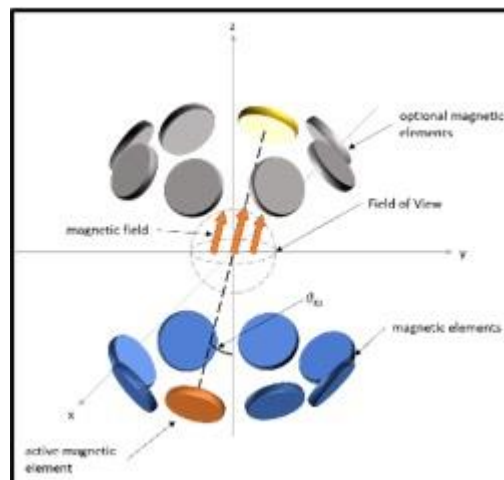


Image 2. Schematic image of the device functioning.

CONTACT

Instituto de Instrumentación para Imagen Molecular
Joseba Alonso Otamendi
joseba.alonso@i3m.upv.es
UPV, Edificio 8B, Acceso N, 1ª Planta.
Camino de Vera s/n
46022 – Valencia