Desktop MRI

The power of MRI and spectroscopy combined on a benchtop system

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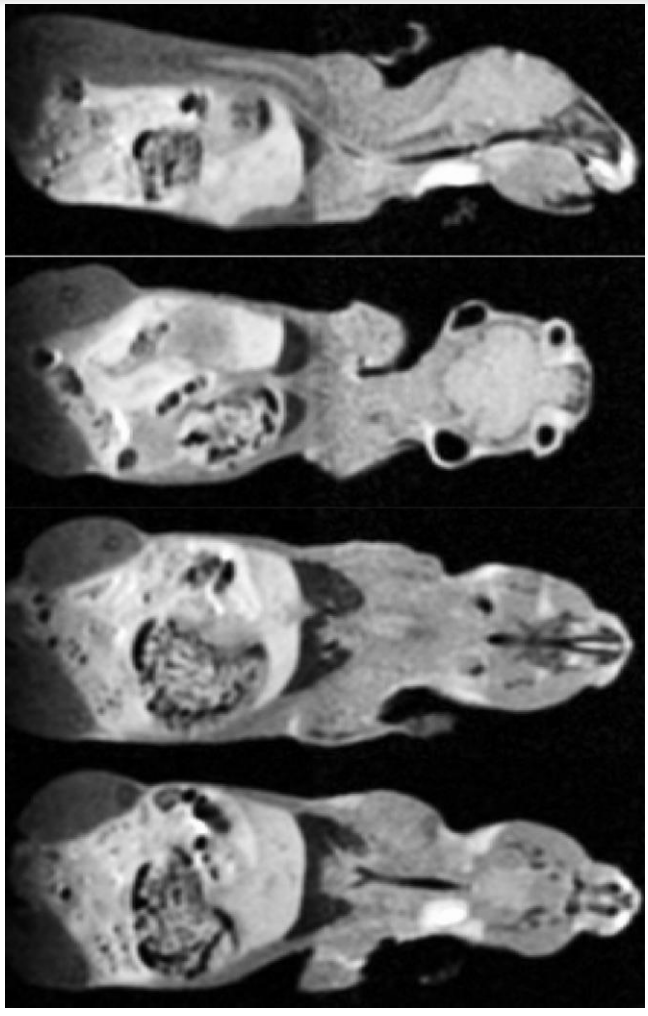
- 0.5 Tesla / 40 mm clear bore
- 0.25 T/m gradient strength
- <1 ppm chemical resolution
- 100 kg weight
- low stray field (Halbach design)
- cryogen free
- no maintenance



The easy access of the wide bore and the high sensitivity of the magnet makes the Desktop MRI system an ideal device for imaging of small animals. The figure shows images of a mouse taken with a 3D spin echo sequence. (TR/TE=250 ms / 20 ms; NS 4; 256x64x64 pixel; 390 µm isotropic resolution).

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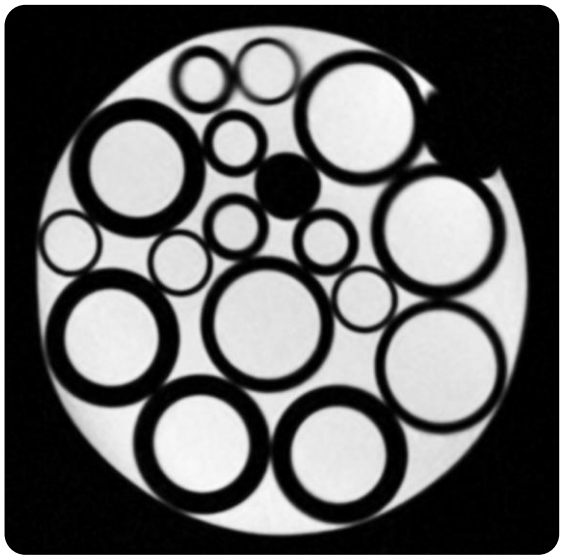
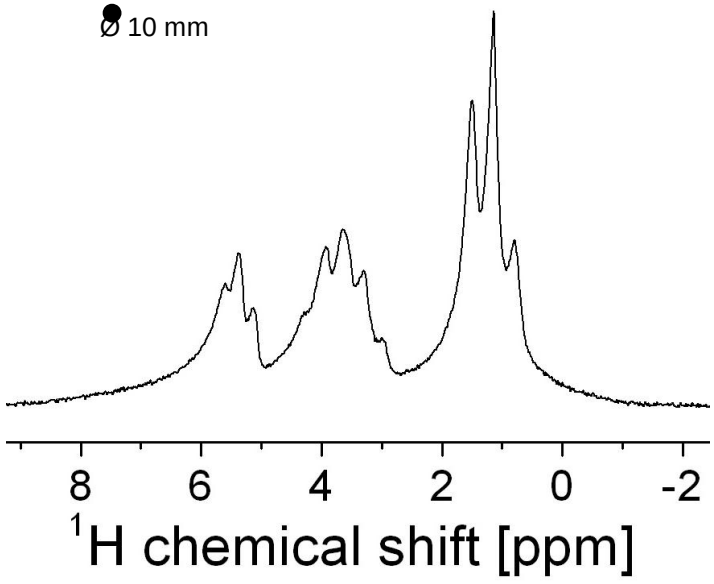
Imaging

The portable MRI system uses a novel permanent magnet design generating a field of 0.5 T with a homogeneity better than 1 ppm over a cylindrical volume 40 mm in diameter. Equipped with a 3D active shielded gradient coil system and an optimized rf coil the system can run the most demanding pulse sequences. The fully digital spectrometer is controlled by a flexible software that allows powerful data processing and automation.



Spectroscopy

The high homogeneity of the magnetic field allows one to use the magnet for high resolution spectroscopy and chemical shift imaging. The line of a water sample 35 mm in diameter measured at FWHM in a full sample is 9 Hz (0.5 ppm). The homogeneity improves by reducing the sample size, for example, a resolution of about 2 Hz is measured for samples contained in 10 mm tubes. Such a high resolution is enough to resolve the J-coupling structure in ethanol, as it is shown in the figure.



Technical specifications	
Operating Frequency	20 MHz / 0.5 Tesla
Sample Tube Diameter (OD)	40 mm
Sample Length	Clear bore
Field Uniformity	< 1 ppm
Gradient coils	Active shielded – 0.25 T/m
Magnet Weight	100 kg
Magnet Dimensions	cylinder: ϕ = 30 cm - Length = 40 cm

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