

Going further beyond
Conventional NMR

NMR



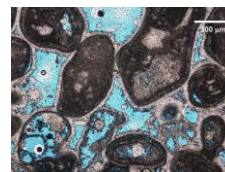
STELAR

Increase your **CORE** knowledge with.....



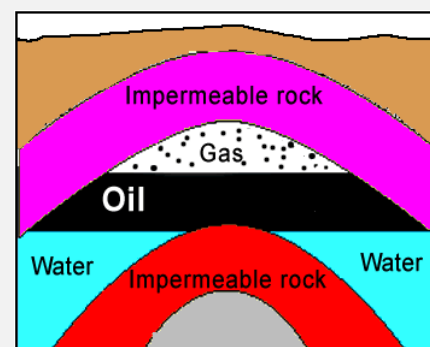
SPINMASTER FFC2000 0.5T Wide Bore

Fast Field Cycling NMR Relaxometer
With special 40 mm internal bore FFC magnet
and probes
For 1" and 1.5" **ROCK CORE ANALYSIS**



Measuring T_1 dependency on field strength through FFC provides better understanding of:

- ✓ Porosity
- ✓ Surface affinity of water in pores
- ✓ Pore connectivity
- ✓ Wettability
- ✓ Moveable fluid volume (BVM)
- ✓ Bulk volume of irreducible water (BVI)



Knowledge of these parameters may help improve oil extraction processes

SPINMASTER FFC2000 0.5T Wide Bore is an added complement to current rock core analysis techniques

SYSTEM FEATURES



SPINMASTER FFC2000 0.5T Wide Bore is a unique NMR instrument designed to measure the field dependence of the NMR longitudinal spin-lattice relaxation time, T_1 for rock cores and large samples up to 1" or 1.5" diameter. The transverse spin-spin relaxation time, T_2 , may also be measured (contact Stelar for details).

- ✓ **Measurement of relaxation times from a fraction of a millisecond to several seconds**
- ✓ **Fully automated acquisition of NMRD profiles from 10 kHz to 20 MHz (^1H Larmor frequency)**
- ✓ **Measures large samples with up to 1" or 1.5" diameter such as rock cores**
- ✓ **Multi-nuclear operations**
- ✓ **Efficient and accurate temperature control (range from -140 °C to +140 °C with a 0.1 °C resolution)**
- ✓ **Minimum operating costs (no cryogenic gases necessary)**
- ✓ **No complicated sample preparation required**

MAIN SPECIFICATIONS

Magnet

Resistive, low inductivity, 2-layer air-core solenoid suitable for Fast Field Cycling NMR measurements.

The magnet is housed in a custom glass-Perspex container and percolated by a special cooling liquid.

Access bore: 40mm

Max Field B_0 : 0.5 Tesla $\pm 10\%$ (20 MHz ^1H Larmor frequency)

Homogeneity: < 150 ppm on 1cm³

Field switching time: < 3 ms (at 10 MHz field jump)

Power supply

High stability computer-controlled bipolar current source. The system is fully software-controlled.

Maximum power: 20 kW

Maximum current: 430 A

Current stability: < 50 ppm

Switchable levels: 4 software-controlled levels

(off, Bpol, Brelax, Bacq)

Switching time: < 150 μs / MHz

Mains: 400 VAC / 22kW 50/60 Hz

Probes

1" probe tunable from 10 to 20 MHz (special 1.5" probes available on request).

Space requirements: 10 m²

Cooling System

Dual independent, thermally coupled loops.

The hermetically closed secondary circuit uses a room temperature cooling fluid.

The primary circuit uses tap water at 15 °C and 0.7 bar pressure.

NMR Console

Stelar digital NMR console (PCNMR) with research grade versatility:

Digital receiver with direct detection from 500 kHz to 80 MHz, with a maximum spectral width of 10 MHz.

Three independent RF TX channels, each programmable from DC to 80 MHz.

128 bit / 20 ns / 7 loops levels pulser.

250 W RF linear power pulse transmitter from 500 kHz to 150 MHz.

NMR software package with an ample sequence/experiment library for Fast Field Cycling experiments as well as for most classical NMR, NMR diffusion and NQR applications.

Variable Temperature Controller (VTC90)

Standard gas flow system.

Temperature range: -140°C to +140 °C

Precision and stability: 0.1 °C