

# the minispec mq series

## ● TD-NMR Analyzers

Versatile Time-Domain NMR Analyzer from the NMR Experts.

- Relaxation and diffusion analysis
- Rapid, non-destructive, solvent free technology
- No sample preparation
- Replaces wet chemical and physical tests
- Simple linear calibration with 3 or more samples
- Chemometric calibration option
- 21 CFR part 11, IQ/OQ/PQ and GLP compliance
- Low maintenance
- Sample temperature range from -100°C to +200°C for unique R&D applications
- Fully developed magnet design for utmost speed of analysis

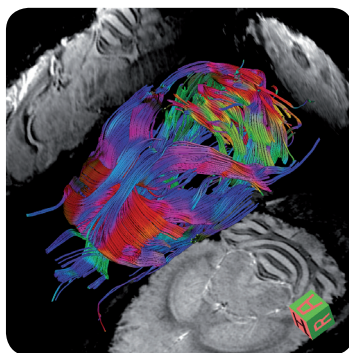
### TD-NMR General Principles

TD-NMR uses a permanent magnetic field and radio frequency (RF) energy to look at NMR sensitive nuclei such as hydrogen and fluorine. In response, RF signals are generated by the sensitive nuclei and the signals are detected by the minispec. The amplitude and duration of these signals are related to the properties of the sample.

Unlike other spectroscopic techniques, TD-NMR is unaffected by sample color and surface properties. The minispec is perfectly suited to both QA/QC labs and R&D facilities because it is a nondestructive and non-invasive measurement that requires no sample preparation.



the minispec Droplet Size Analysis



the minispec Contrast Agent Analysis



the minispec Cross Link Density Analysis

## the minispec International Standard Methods

There are several published and well established methods for the minispec, including a number of international standard methods.

In the food industry, Solid Fat Content (SFC) measurements are described in official methods by several organizations, including ISO, IUPAC and AOCS. In agriculture, oil and moisture in oilseeds and residues is determined by international standard methods. In the petrochemical industry, percent hydrogen in hydrocarbons like jet fuel and diesel are the subject of ASTM methods.

## Food Industry

- Solid Fat Content in fat compositions (AOCS Cd 16b-93, ISO 8292 & IUPAC 2.150 methods)
- Oil and moisture in seeds and oilseed residues (AOCS Ak4-95, ISO 10565 & 10632 methods, USDA GIPSA approved)
- Solid Fat Content as well as total fat content in chocolate and chocolate related products
- Droplet size analysis in O/W and W/O emulsions
- Oil, water and protein in dry and wet food and feed

## Textile Industry

- Spin Finish on Fibres (OPU)
- Coatings on Polymers

## Polymer Industry

- Xylene soluble content in polypropylene
- Density and crystallinity in polyethylene
- Rubber content in polymers like ABS or polystyrene
- Cross-link density of elastomers

## Petrochemical Industry

- Hydrogen content in hydrocarbons (ASTM D 7171 method)
  - Oil content in paraffin and wax
- the minispec Contrast Agent Analysis

## Pharmaceutical Industry

- Fat and lean in live mice and rats
- Contactless weight determination
- Moisture and solvents in powders and tablets
- Contrast agent investigations near MRI fields:  
0.25 T, 0.5 T, 0.75 T, 1.0 T and 1.5 T

## Healthcare Industry

- Fluorine content in toothpaste
- Melting properties of cosmetics

## R&D and Academics

- All types of temperature dependent relaxation time studies
- Diffusion experiments
- Single-Sided NMR

## Typical minispec Configurations

- mq60: 1.41 T / 60 MHz
- mq40: 0.94 T / 40 MHz
- mq20: 0.47 T / 20 MHz
- mq10: 0.23 T / 10 MHz
- mq7.5: 0.17 T / 7.5 MHz

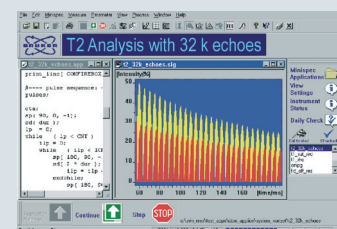
## minispec Plus m<sup>+</sup> Software for Routine Applications



For QC/QA and R&D applications, the minispec can be delivered with:

- autosamplers & barcode readers
- all types of accessories like baths and blocks
- sample tubes with sizes from 7.5 to 50 mm Ø, thus perfectly suited also for inhomogenous samples

## Software for R&D Users



## Highlights of R&D features:

- TD-NMR from 2 to 65 MHz
- a wide selection of intelligent Plug & Play probes for fast and tool-free exchange, e.g. for hydrogen and fluorine analysis
- a variety of magnet/probe combinations for special needs
- fully remote temperature control from -100°C to +200°C
- relaxation time determination with a large number of echoes/data points
- diffusion-type experiments with state-of-the-art gradient technology
- shaped RF pulses and linear transmitter for selective and spin lock experiments
- powerful experiment editor (ExpSpel) for application development

**Bruker BioSpin**  
is ISO 9001 certified.

Magnetic safety measures apply to the operation of the minispec.