



the minispec LF110

● for Heaviest Rats down to little Organs

Body Composition Analysis (Fat, Lean, free and total body Water) in

- Rats
- Mice
- Organs and Organ Parts
- Tissue Samples
- Biopsy Investigations

the minispec LF-series

- Solutions for Mice
 - minispec LF50
 - minispec LF50H (horizontal sample insertion)
- Adaptable Solutions for Mice and Rats
 - minispec LF90II
 - New: minispec LF110

The Bruker minispec Systems LF90II and LF110

Since many years the Bruker minispec is well-known in industries as well as R&D.

One decade ago the minispec has found applications in obesity, nutrition and diabetes areas as an attractive tool for the non-harmful examination of lab animals. Important parameters like Fat and Lean can be determined in approximately 2 minutes only.

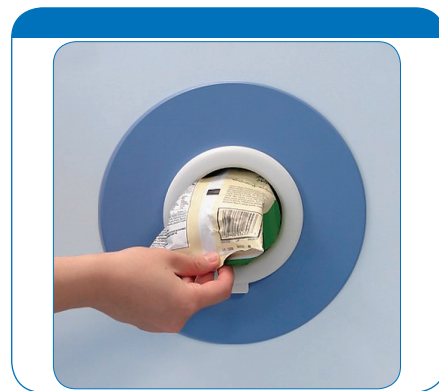
Same as in big MRI systems in hospitals where humans are examined routinely nowadays, the animal is examined without applying anaesthesia in a fully awake state. Little movements of the animals will not influence the measurement significantly. For investigation of soft(er) body tissues, Magnetic Resonance is the right choice, rather than x-ray techniques. With Bruker's introduction of the LF90II system generation, not only mice, but also rats can be examined. Now that the LF110 is available, also rats $\geq 1\text{kg}$ can be analysed. The measurement time in the LF110 takes just 2 minutes and also mice and smaller samples can be investigated.



minispec Probe-in-Probe: Unique design to enable measurements on low-weight samples.



Red Restrainers: while the operator can always watch the animal, the rodent will assume being in a dark place.



TD-NMR can inspect even through the packaging material of diverse samples, like for quick fat content determination.

Unique Probe-in-Probe Design

The LF90II and LF110 feature a unique probe-in-probe solution developed to measure small samples, like newborn rodents, biopsies and other samples with premium sensitivity. The sensitivity is directly related to both, the filling factor of the probe and the probes quality factor. Thus, both factors have been designed for optimal performance combined with ease-of-use.

Reduced animal stress and red restrainers

The Body Composition Analyzer (BCA) application... with the minispec minimizes the animal stress because anesthesia is not required. More importantly, the animal stress is further reduced by use of the minispec proprietary red restrainers. It has been proven by experiment that rodents move freely into the restrainers, due to their dichromatic color perception, while the animal can be monitored all time.

Further Applications of the LF90II / LF110

In addition to analyzing body composition, the minispec LF-Series can be used for other applications. Two examples should be mentioned in this context.

1.) Application on Power Bars / Packaged Chips and Crisps

As packaging materials such as plastic foils do not provide NMR signal in the LF-series systems and NMR technology does not fully screen the object, packaged samples like food can directly be analysed, without removing the packaging. Fat and moisture content can be easily determined that way, applying well-recognized TD-NMR standard methods. Fat in packaged power bars can be determined in a few seconds.

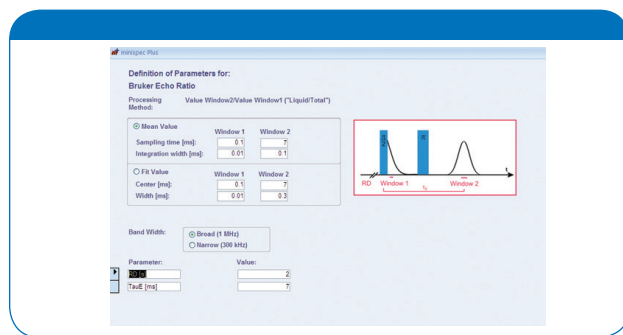
2.) Oil in Oil Sands and Oil Shales / Bitumen

Extremely inhomogeneous samples make it necessary to investigate a rather big volume of a batch;

such measurement pre-conditions can be fulfilled by using minispec LF-instruments. The sample geometry can be cylindrical, for example with a diameter of 11 cm and a height of 18 cm. This offers big potential in the petrochemical field for oil content determination in oil sands, shales or for analyses on bitumen.

minispec LF-series Advantages

- No harm to animal
- No anesthesia, Animals are measured awake
- No preparation of Animal before analysis
- NMR screens all the animal, not only parts of it. Integral method.
- the minispec LF-series applies Magnetic Resonance technology, same as used in hospitals to examine soft tissue of humans.
- Fast Analysis, takes only 2 minutes
- Operator requires no special NMR skills
- Easy and intuitive minispec software
- Probe-in-Probe Design to enable big range of animals / samples
- Starter Calibration with arbitrary samples provided during system installation.
- Advanced Calibration like MRI method development on request.
- Long-term reliable and problem-free operation



minispec Plus Software: the method is defined and the calibration procedure will be started right afterwards.

● **Bruker BioSpin**

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Bruker BioSpin is ISO 9001 certified.

Magnetic safety measures apply to the operation of the minispec.