



MULTI-MODAL MOLECULAR IMAGING

# BioSpec Maxwell PET/MR

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3T, 7T, 9.4T PET/MR

Innovation with Integrity

# Discover. More! Advanced Molecular, Functional and Structural Insights

Combining PET with MRI enhances the capabilities to study detailed morphological changes in different organs and tissues, adding more precise information of the distribution and behaviour of the PET tracer.

## Sequential or Simultaneous PET?

The BioSpec Maxwell 3T, 7T, and 9.4T is designed for PET/MR in small animals with full compatibility between the technologies. Add either a PET insert or PET Inline module for simultaneous or sequential PET/MR.

## Easy Operation and Simple Workflow

Bruker's powerful imaging software ParaVision 360 has dedicated PET/MR workflows so people without prior knowledge in MRI or PET easily and intuitively can acquire an image. The automatic and precise PET/MR image fusion tool and one click data transfer to PMOD reduce cumbersome and time-consuming data handling.

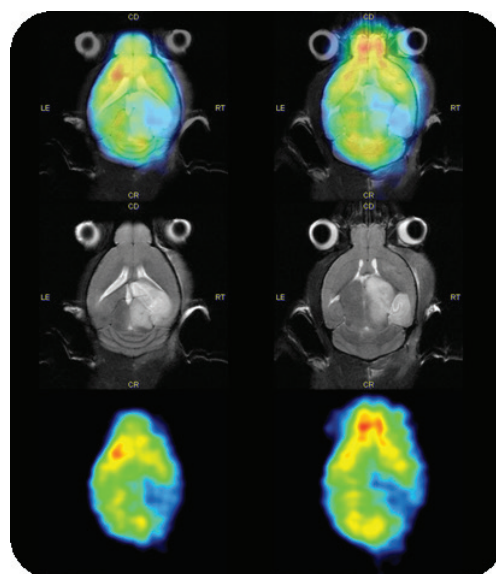
The touchscreen operation at the scanner simplifies animal handling and positioning and provides the opportunity to start the scan immediately after tracer injection, optimizing the time for setup when the radiotracer is decaying.

The animal cradles contains built in animal heating and monitoring ensuring full control over the animal's physiology during the scan. The cradles has dedicated access for tracer injection lines and can be ordered in different sizes for rats and mice or multi mouse (up to 4 mice).

## Outstanding PET and MRI technology

The PET technology used in all Bruker's molecular imaging products is based on continuous LYSO crystals and Silicon PM detectors with advanced depth-of-interaction (DOI) detection, which provides the best sensitivity and high resolution across the entire FOV. The powerful cryogen liquid free MRI comes with advanced electronics, fast gradients, and higher order shims, all hidden in a small footprint scanner.

- No expensive cryogen filling
- Total body PET and Full FOV accuracy
- A wide range of PET reconstruction methods
- Unique boost of MRI sensitivity and resolution with the MRI CryoProbe™
- MR gradient strength up to 900 mT/m, Slew rate: 4200 T/m/s
- State-of-the-art AVANCE NEO electronic
- **Small footprint – fits in every lab**



**Figure 1**

Ischemic stroke model: High resolution MRI and 18F-FDG PET in mouse.

# Simultaneous PET/MR

## PET-Insert 103

Simultaneous PET/MR allows researchers to perform the most advanced molecular imaging experiments temporally correlated.

Simultaneous PET/MR saves time when tracer is decaying and minimize the time the animal in the scanner. The 101x55 mm FOV allows for total body PET of mice and rat head. The high resolution, high sensitivity and high count rate enables dynamic imaging with lower doses and tracer detection in small tissues and organs.

## Precise PET Quantification and Full Data Reliability

To improve tracer detection and quantification MR-based attenuation correction methods has been implemented, which includes the animal, cradle and RF coils. The cradles & coils, are specially designed with minimal PET attenuation and scatter. The MR based attenuation correction and PET optimized cradles are also available for sequential PET/MR.

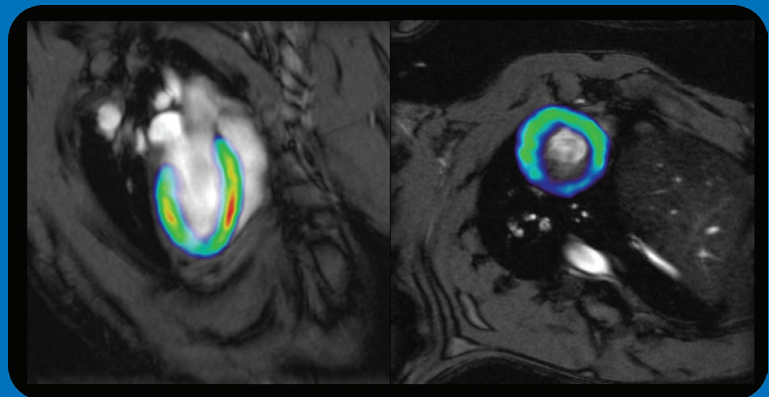
## Faster image and data processing

- Reconstruction power: 4GPU's
- Algorithms: MLEM, MAP, OSEM (2D and 3D), FBP.
- Corrections: Partial Volume, Point Spread Function, Single Scatter Simulation, Dead Time Correction, Decay Correction, Attenuation Correction (MRI-Based). Also available for sequential PET/MR.



## PET Insert 103 specifications

- Easy installation
- 101 mm axial FOV
- 55 mm transaxial FOV
- 12% sensitivity
- 0.7 mm resolution
- 350 kcps (mouse)



**Figure 2**

### Simultaneous cardiac PET/MR imaging in rat.

Complementary information from both PET and MRI modalities allow for full cardiac disease evaluation.



# Sequential PET/MR

## PET Inline Module

By sequential PET/MR the Inline PET detector is placed in front of the magnet ensuring a minimal distance to the animal tail for tracer injection during dynamic PET scanning.

The large 80x150 mm FOV of the sequential PET/MR allows investigations of full rat body as well as up to 4 mice at the same time.

## Tracer Development and Drug Discovery

The large axial, transaxial FOV and high resolution is dedicated for Total Body PET, SUV biodistribution studies and kinetic modeling. The MRI help precise ROI selection and the high sensitivity PET allows for detection of short lived isotopes and quantification in small tissues and organs.

## Automatic and precise image fusion

Bruker's BioSpec Maxwell 3T, 7T, or 9.4T PET/MRI all comes with an Animal Transport System that fast and precise transport your animal between the MRI and PET module and provides precise automated fusion of the PET and MR images.

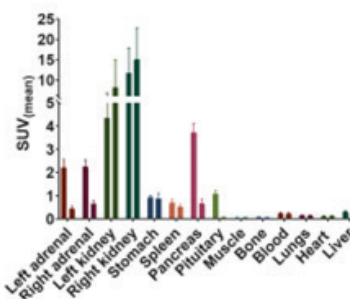
## Quality Assurance

Bruker sets the highest standards for our instruments. We have thorough factory acceptance criteria and predefined QA scan protocols for the user, which ensures reliable results every day.



## Inline PET/MR Specifications:

- Automatic image fusion
- 150 mm axial FOV
- 80 mm transaxial FOV
- 12% sensitivity
- 0.7 mm resolution 50 mm axial FOV
- 560/280 kcps (mouse/rat)



**Figure 3**  
Biodistribution evaluation by SUV

Bruker BioSpin is continually improving its products and reserves the right to change specifications without notice. Order No. T190602 © 2022 Bruker Biospin.

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