

Albira Si

- Full Field of View Accuracy, Breakthrough Results

Performance to Support Your Research

Albira Si Configurations

- PET, SPECT, PET/CT, SPECT/CT, PET/SPECT, and PET/SPECT/CT
- Single compact footprint
- Field upgrades available
- 1 and 3 ring PET options

PET

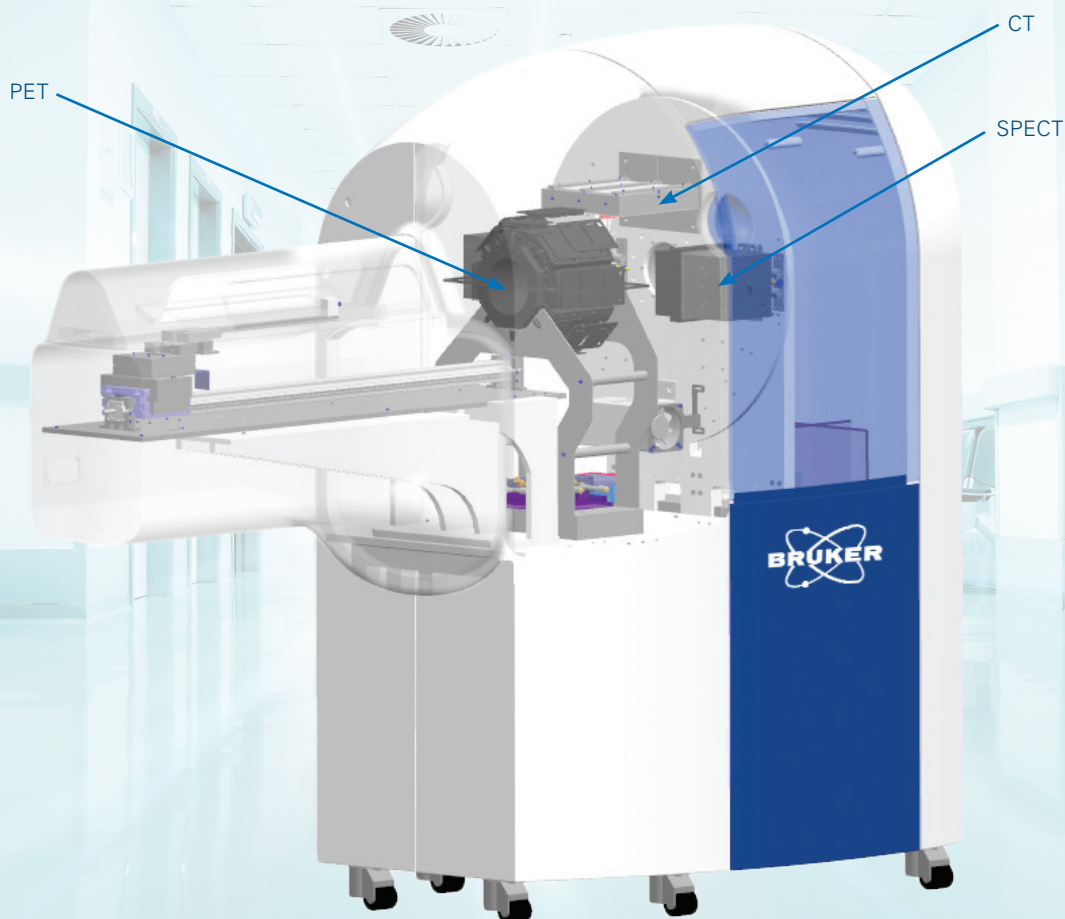
- Si detector continuous crystals, SiPMs, full row and column readout
- 0.7 mm resolution with Full Field Accuracy and excellent sensitivity
- Large FOV for simultaneous whole body dynamic imaging
- Automatic PET/CT registration with attenuation correction
- Rapid GPU reconstructions

CT

- Hounsfield calibrated allowing reliable image segmentation and quantitation
- Fast scan settings for longitudinal studies
- Large FOV for rat whole body imaging
- Dynamic 2D X-ray mode for fluoroscopic imaging

SPECT

- Broad energy range for imaging low and high energy isotopes
- Adjustable FOV for rapid whole body scans and focused scans
- Range of SPECT collimators for optimized performance
- Automatic SPECT/CT registration with attenuation correction



● Complementary Solutions in Imaging

Animal Handling

- Anesthesia: Fully integrated. Compatible with most common commercial gas systems
- Reliable, easy to use rat and mouse beds; Fully compatible with Bruker MR
- Realtime video monitoring

Optional

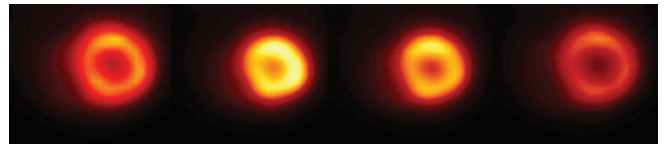
- Temperature Control System: Electrically heated mats for rats and mice
- Physiological Signals: ECG, Respiration, Temperature, and Blood Pressure
- Gating Acquisition: Cardiac and Respiratory for PET and SPECT; Dual Gating for PET
- Four mouse bed for simultaneous imaging
- Multimodal Animal Cradles (MMACs) Combine any Bruker Preclinical Imaging modality. Supports application of anesthesia gas, warm air temperature supply, and supervision of vital parameters (ECG and respiratory)

MMAC Compatible devices

- BioSpec and ICON MR instruments
- Albira II and Si PET/SPECT/CT instruments
- SkyScan 1176, 1276 and 1278 μ CT instruments
- Xtreme I and II Optical X-ray instruments
- MPI instruments



Cardiac Gated 18FDG/PET Imaging



Mouse cardiac gated 18FDG/PET imaging. Dose 250 μ Ci and 30 min PET scan. Courtesy of G. Akibani, Texas A&M Institute of Preclinical Studies, Texas A&M University, Texas, USA.

Mouse NaF18/PET Imaging



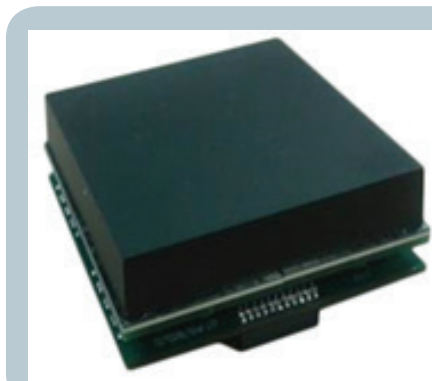
Mouse NaF18 100 μ Ci; Dose 100 μ Ci and 10 min PET scan

Bruker Si Detectors

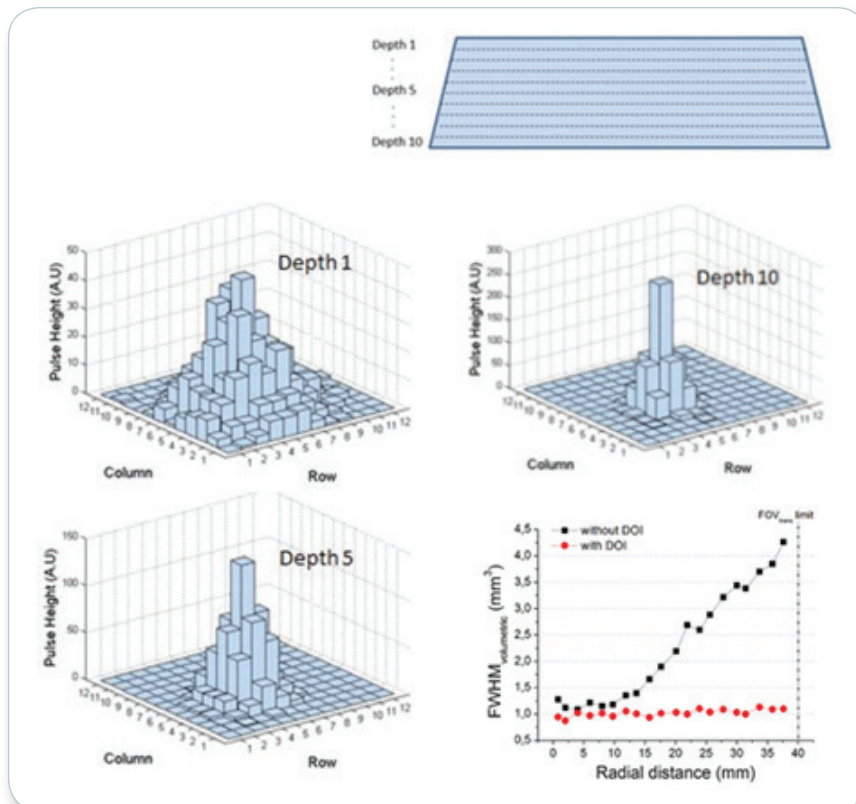
Bruker's Si detectors provides best in class performance 0.7 mm resolution with Full Field Accuracy, 12% sensitivity, and mouse/rat NECR 560/330 kcps. This is all possible due to the unique combination of Bruker's exclusive continuous crystal, SiPM and advanced electronics.

Our universal Si PET detectors are MR compatible, offering leading performance across the Albira Si PET/SPECT/CT, PET/MR 3T, and PET Insert integrations.

- Exclusive continuous crystal detector offers 3D precision equivalent to 10+ layer pixelated crystal, resulting in reduced parallax error, more accurate LORs, and consistent performance across the FOV.
- SiPMT, compatible with integrated SPECT/CT and integrated inline and insert MR.
- Proprietary electronics and software with row and column readout, enabling advanced depth-of-interaction measurement and correction, significantly surpassing previous Anger logic approaches.



- Continuous crystal, 10-layer-equivalent DOI
- SiPM MR compatible
- Advanced electronics, with full row and column readout

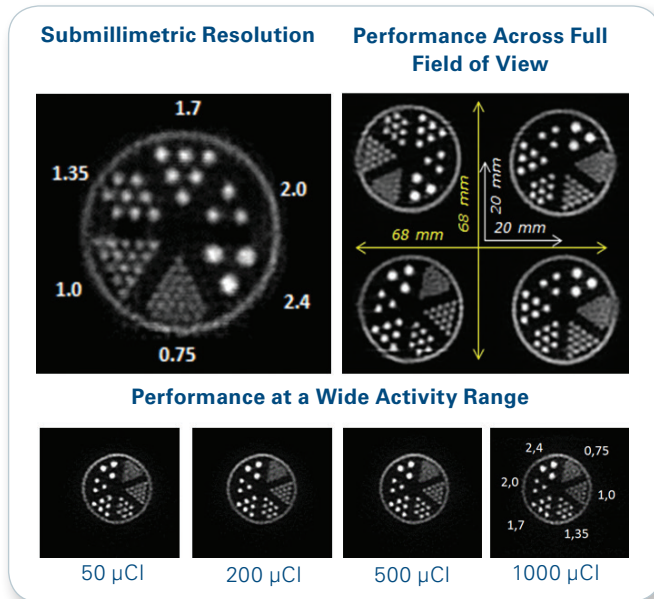


The detected light distribution becomes narrower as the gamma ray interaction occurs deeper into the scintillator crystal. The accurate measurement of the distribution and its processing allows for the DOI determination. This example shows a 10 slice sampling of the whole crystal thickness. (Bottom Right) The DOI Point source resolution measurements are consistent across the FOV with DOI correction (red plot).

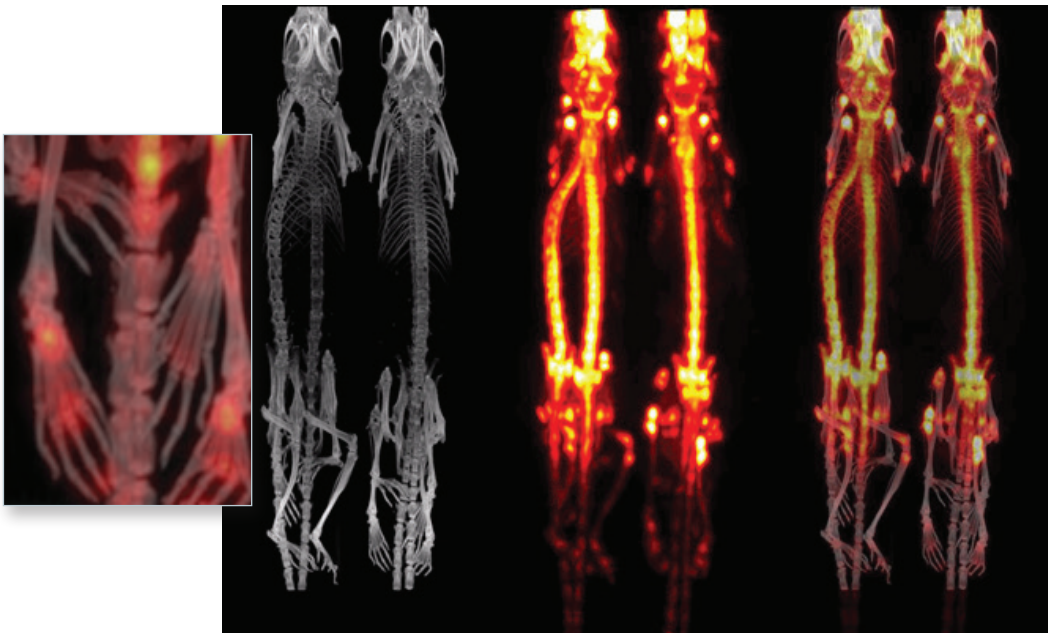
● Resolution and Full Field Accuracy (FFA)

FFA offers real, homogeneous sub-millimetric volumetric PET resolution in all three axes in the whole field of view, with superior precision in quantification.

FFA results in more reproducible data, independent of variable sample positioning, and more reliable imaging of large samples or multiple animals across the FOV to facilitate accuracy and throughput.



Bruker's Si detectors provide submillimetric resolution across the entire FOV and imaging (15 min. acquisitions) at a range of activities.



Four animal NaF18 PET/CT imaging.
Courtesy G Akibani Texas A&M Institute of Preclinical Studies, Texas A&M University.

Intuitive Interface, Comprehensive Analysis

Albira Si Software Suite Modules: Manager, Acquisition, Reconstructor, Supervisor

Manager

- Study/subject registration
- Settings preloaded

Acquirer

- Status/progress indicators
- Simple workflow

Reconstructor

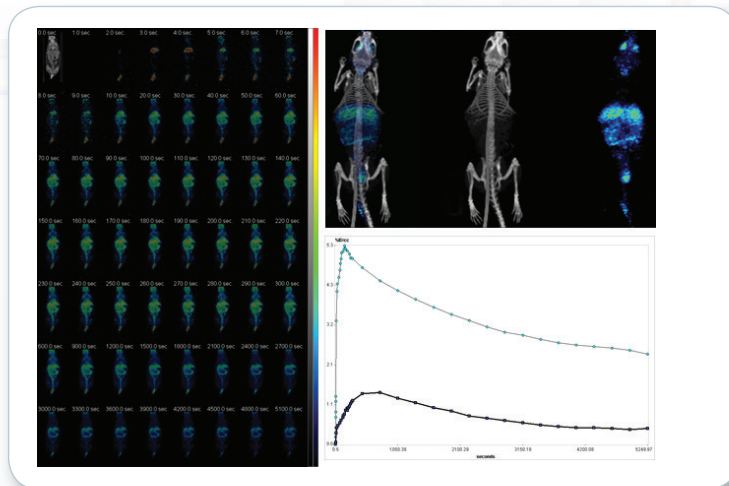
- Standard and Advanced settings, with reconstruction queue
- List-mode data and flexible reconstructions
- Scatter, Randoms, Decay, Dead-Time and Attenuation corrections

Supervisor

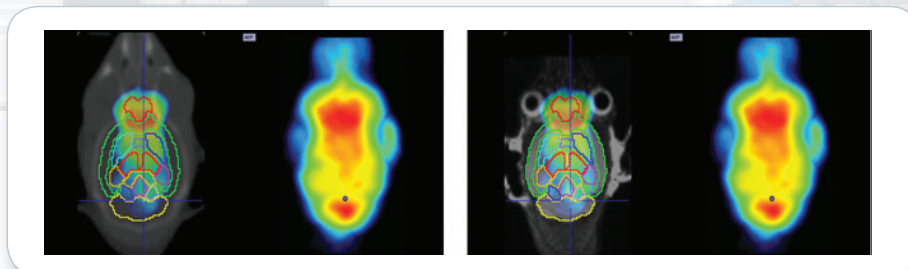
- Simple PET/SPECT/CT quality control wizard
- Quantitation, Uniformity, Energy Resolution, and Compression

Dedicated PET Analysis Software

- PMOD PET/SPECT analysis software (PMOD Technologies, LLC)
- Includes PBAS, PKIN, and PFUS modules. Additional modules available.
- Image processing and presentation, VOI and SUV calculations, image registration tools, 1, 2, and 3 compartment kinetic modeling

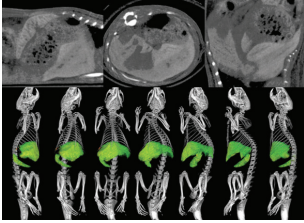


90 min dynamic mouse ^{11}C /PET display and TAC prepared using PMOD. Courtesy of E. Snay and Dr. F. Fahey, Boston Children's Hospital, Boston, Massachusetts.



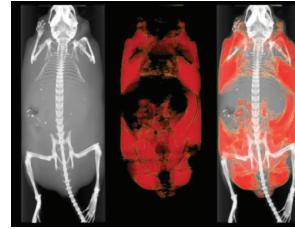
Mouse ^{18}F FDG/PET with PFUS mouse brain VOI atlas applied. Courtesy of Dr Paul Rosenberg at Boston Children's Hospital, Boston, Massachusetts.

● Applications



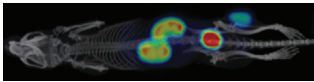
Rat Whole Body CT Imaging

Rat whole body CT image, with contrast enhanced liver and spleen. Courtesy of M.W. Leevy, University of Notre Dame, Indiana, USA.



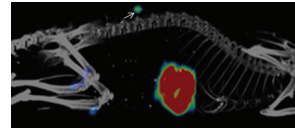
CT and Adipose Segmentation

Hounsfield CT image segmentation for adipose tissue in a Lep^{ob} mouse. Courtesy of M.W. Leevy, University of Notre Dame, Indiana, USA.



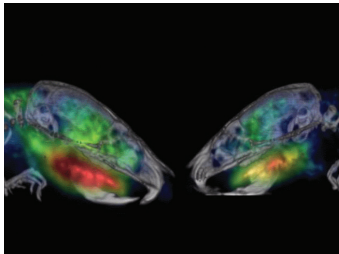
⁶⁴Cu/PET Tumor Imaging

⁶⁴Cu-NODAGA-TATE/PET AR42J-tumor mouse imaging. Molecular Imaging and Radiochemistry & Biomedical Chemistry, Department of Clinical Radiology and Nuclear Medicine, Medical Faculty Mannheim at Heidelberg University.



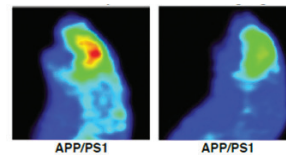
⁹⁹Tc/SPECT hNIS-cell Imaging

⁹⁹Tc/SPECT imaging of HCT 116-hNIS-NEO tumor. Courtesy of Dr. Matthew Leevy, Univ. of Notre Dame, Indiana, USA.



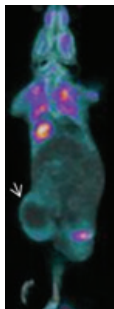
¹⁸FDG/PET Brain Imaging

Head-to-head simultaneous two rat ¹⁸FDG/PET brain imaging. Dose 300 μ Ci and 10 min PET scan. Courtesy of M.W. Leevy, University of Notre Dame, Indiana, USA.



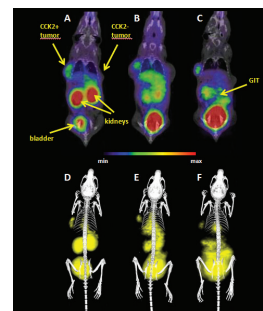
¹⁸F-AV-45 PET Brain Imaging

Transgenic Alzheimer mice scanned for 15 min after injection of ¹⁸F-Florbetapir (150 μ Ci). Left sagittal view of a non-treated mouse. Right, sagittal view of a treated mouse. Courtesy of V. Bonet-Costa, University of Valencia, Valencia, Spain.



¹⁸FDG/PET Tumor Imaging

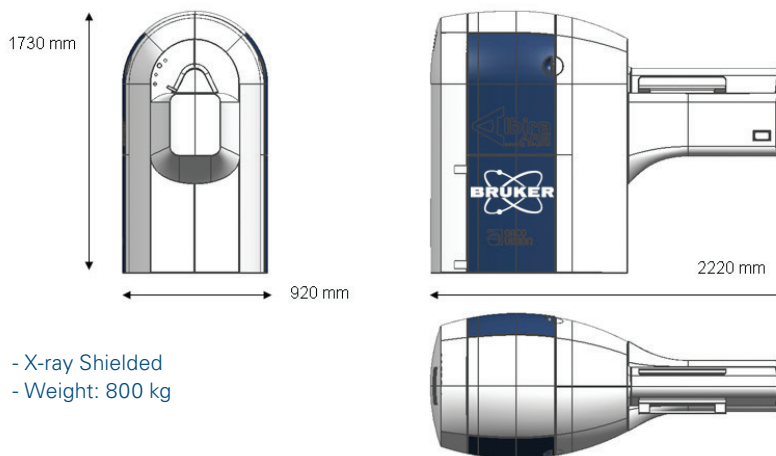
¹⁸FDG/PET 4T1 tumor xenograft mouse imaging. Dose 100 μ Ci and 10 min PET scan. Courtesy M.J. Vicent, Principe Felipe Centro De Investigacion.



⁶⁸Ga/PET Tumor Imaging

[⁶⁸Ga]-AAZTA-MG in CCK+/- tumor xenograft bearing BALB/c nude mice 30 (A, D), 45 (B, E) and 60 (C, F) min PI. Institute of Molecular and Translational Medicine, Faculty of Medicine and Dentistry, Palacky University in Olomouc, Olomouc, Czech Republic.

Imaging System Components:	Specifications:
PET	
Detector	24 Modules, 8 modules per ring; Patented continuous crystal coupled to 12x12 SiPM; Proprietary electronics optimized for HR 3D DOI
Spatial Resolution	Up to 0.7 mm; Guaranteed submillimetric volumetric resolution; FULL FIELD ACCURACY: Homogeneous resolution better than 1.2 mm in the whole FOV of 80+ mm
FOV	Axial 148 mm (3 Ring), 46 mm (1 Ring), up to 300 mm with bed movement with 1 and 3 Ring; Transaxial 80 mm
Sensitivity	3 Ring, 12% (9% NEMA); 1 Ring, 4.5% (3.25% NEMA)
NECR	Mouse 560 kcps/35MBq (>150kcps/3.7MBq) Rat 330 kcps/43MBq (>150kcps/10MBq)
Modes	Static, Dynamic, Dual cardiac/respiratory gated
SPECT	
Detector	Dual head camera system with patented continuous CsI(Na) crystal technology
Energy Range	30 – 400 keV
FOV	25 – 120 mm Zoom, and 210 mm with bed movement
Minimum resolution	0.5 mm
Collimators	Pinhole, Multipinhole, High Energy, High Resolution
Modes	Standard, 2D, Cardiac/respiratory gated
CT	
Detector	Digital flat panel 2400x2400 pixels
X-ray Energy	10 – 50 kVp
Resolution	90 µm with minimum 5 µm voxel
Max Current	1 mA
FOV	70x70 mm



● **Bruker BioSpin**

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www.bruker.com/AlbiraSi