Fraunhofer Institut Biomedizinische Technik

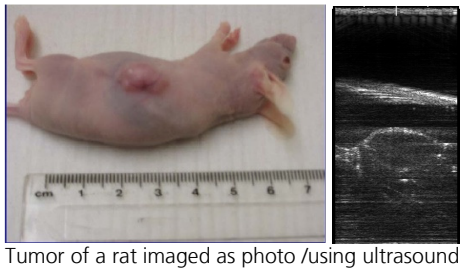
Ultrasound system for small animal imaging

Description

Nowadays the evaluation of pharmaceuticals on small animals is essential for science and has to be done. In order to reduce the count of animals and minimize their stress the small animal imaging has become more importance.
The utlrasound system developed by Fraunhofer IBMT reduces the amount of animals needed for evaluation by using an imaging system with high resolution for monitoring of medication and drug delivery. In contrast to CT imaging ultrasound is a noninvasive real-time capable modality that is less expensive.

Specification US system

The ultrasound system is based on the DiPhAS-Plattform developed by IBMT. This is a digital beamformer using 128 digital channels allowing a free programming of dynamic focussing, electric steering, apodization of sending amplitudes, free programming of sending pulse forms, the use of sub-apertures of the ultrasound transducer array and multi-beam-techniques for image improvement.
In the transmit case the focussing, apodization, transmit voltage (up to 40Vpp) and transmit midfrequency (5-20MHz) can be adjusted. The receiver provides a bandwidth of 20MHz, samplingrate up to 80MHz with 12bit and a delay of 100µs maximal with a resolution of 25ns.
Because these imaging modes require more than the usual B-mode imaging, advanced data acquisition based on radio-frequent (RF) data is introduced containing the sum and channel data (unprocessed RAW data) of each sub-aperture or channel.
For fast data processing, scan converion and data input/output a pc is integrated in this platform. It is also possible to connect the system to an external PC using the USB 2.0 interface.



Tumor of a rat imaged as photo /using ultrasound

Specification transducer array

To match the needs for high resolution ultrasound imaging for diagnostics for small animal imaging a custom 20-MHz linear array transducer was developed. Commercial probes using normal or high frequency arrays can also be connected to the system for imaging.

Ultrasound array transducer with 20MHz

Our Offer

With this digital-phased-array system by Fraunhofer IBMT the programming of the device with all the important setting for ultasound imaging is possible with fast signal processing. This is therefore a unique platform for biomedical science and development for high frequency diagnostic imaging.

We offer:

- Hardware development
- Development of signal processing algorithms
- System integration
- Ultrasound-Array-Technology

The technologies can be licensed.

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