

Intravascular and Intracardiac Ultrasound Imaging Probes (#5194)

Low power high performance imaging technology for cardiac diseases

To address the limitations of conventional methods, inventors at Georgia Tech have developed a novel technology that will accomplish all transmission and receive tasks in a small area, with low power without compromising the performance. Since synthetic phased array beamforming is used, no phase/delay generation circuits on the CMUT array chip are needed. This technology innovatively ensures that the temperature of the catheter does not increase to damaging levels when the catheter is powered and allowed to dry. To date, other electronics have not considered this issue involving power limitations. In order to protect the imaging probe against overheating and to enable higher power consumption while imaging, there is a low power temperature switch.

Benefits/Advantages

- Simple - significantly reduces the complexity and area requirement
- Increased rate - allows the collection of a reduced number of data from the available dataset to get faster data collection and enough frame rates
- Powerful - generates high voltage transmit pulses and low noise amplification of the CMUT output current

Potential Commercial Applications

- Intravascular ultrasound
- Ultrasound imaging

Background/Context for This Invention

The rise in the number of hospital admissions for cardiac diseases is leading hospitals to invest more in intravascular ultrasound (IVUS) devices. As such, there is a significant unmet need for the possibility of an external electrical connection to an imaging device for real time imaging as compared to current solid-state SL-IVUS arrays. Moreover, this will provide for an improved implementation of electronics systems for intravascular and intracardiac capacitive micromachined ultrasonic transducers (CMUT) based ultrasound imaging probes.

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More Information

U.S. Patent Issued - [US8891334B2](#)

Publications

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/intravascular-and-intracardiac-ultrasound-imaging-probes>

Images: