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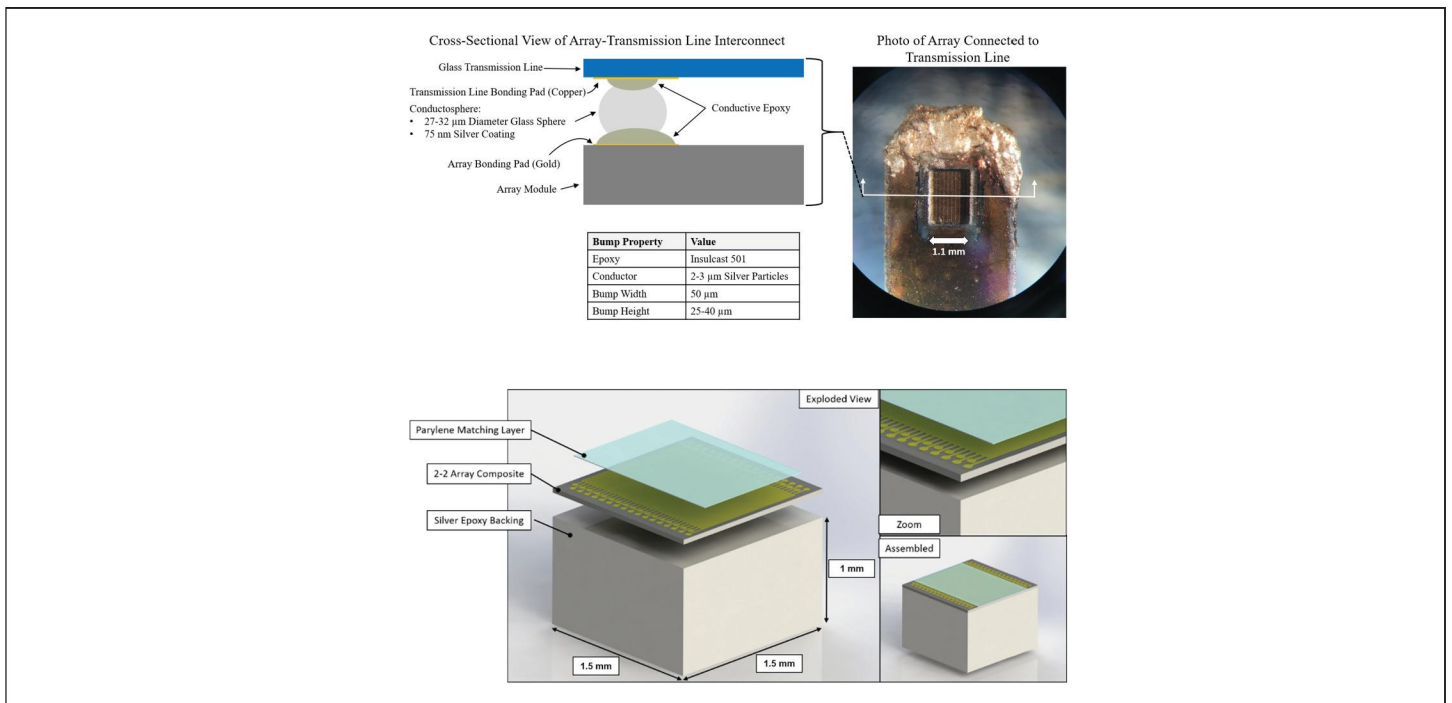
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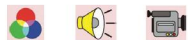
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High-Frequency Ultrasound Array Designed for Ultrasound-Guided Breast Biopsy

The selection of images on the cover show different components of the miniaturized high frequency ultrasound array designed to be integrated within a core biopsy needle to improve tissue sampling accuracy during breast cancer biopsy procedures. These images include an exploded view of the array acoustic stack including backing, 2–2 composite and parylene matching layer as well as a zoomed view of these three separate layers as well as the final assembled array unit with array dimensions given in millimeters. In addition, a cross-sectional view of the interconnect scheme between array and the glass transmission line electrical interconnect component is shown. Silver-coated glass spheres bonded by conductive epoxy were used to connect bonding pads on both the array module and transmission line. Development of these novel fabrication and assembly solutions enabled the successful testing of this miniaturized high frequency ultrasound array device.

Images are courtesy of Thomas Cummins, Payam Eliaho, and K. Kirk Shung. The authors are with the Department of Biomedical Engineering, University of Southern California, Los Angeles, CA 90089 USA.

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