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Use of rapid protyping techniques in transducer manufacture

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This paper will describe the use of a rapid protyping technique, known as micro-sterolithography, for the manufacture of ultrasonic transducers. There are two main types to be described. The first is a MEMS-type capacitive transducer, this being an example of a capacitive micromachined ultrasonic transducer (CMUT). This can be made with all the main structural elements fabricated from polymers, so that no silicon processing is required. Experiments have investigated the properties of these devices, operating in air, water, and in contact with a metal surface. The technique has also been used to make electromagnetic acoustic transducers (EMATs), by forming the main structure from polymers and including a metal coil. These are interesting developments, which may have application to the fabrication of many types of acoustic MEMS devices.