Special Issue

Ultrasonic Transducers and Devices: Design, Fabrication and Applications

Message from the Guest Editors

Ultrasonic transducers have been widely used to convert one form of energy into vibration energy classified according to the medium of wave generation. Ultrasonic transducers and sensors are devices that generate or sense ultrasound energy, and can further be divided into three broad categories: transmitters, receivers, and transceivers. Since piezoelectric materials generate a voltage when force is applied to them, they can also work as ultrasonic detectors. Systems use separate transmitters and receivers or combine both functions into a single piezoelectric transceiver. Ultrasound transmitters can also use non-piezoelectric principles, such as magnetostriction. Materials with this property change slightly in size when exposed to a magnetic field and can be used as practical transducers. Piezoelectric crystals, including quartz, Rochelle salt, and certain types of ceramic, convert an oscillating electric field applied to the crystal into a mechanical vibration. They are the most popular and versatile type of ultrasonic transducer.

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