

Shear Viscoelasticity of Ultrasonic Couplers Investigated by Broadband Ultrasonic Reflectivity

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Acoustic shear wave velocity and attenuation of ultrasonic couplers were investigated by the broadband reflectivity measurements at around room temperatures and ~20MHz. The feature of the present technique is to use impulsive pulse and normal incident wave to reflection interface. Its characteristics are compared with the inclined incident wave technique used so far. It is found that the normal incident wave technique is nearly free from the diffraction effect in contrast with the inclined incident wave technique. The shear wave velocity dispersion was clearly observed for every material in the present work between 15 MHz and 25 MHz. It is also observed that shear wave velocity decreases with increasing amplitude of ultrasonic pulse. The present data is useful to design ultrasonic shear wave instruments and to interpret measurement data of shear wave properties.