

Device for measuring the propagation speed of an ultrasonic wave in a polymer nanocomposite using calibration markers, which generates and measures the speed of the ultrasonic wave using a frequency meter, a frequency divider, a square-wave generator, a piezoelectric transducer mounted on a polymer nanocomposite sample, and a resonant amplifier. The polymer nanocomposite sample is connected to a fused quartz buffer. Device additionally includes a frequency synthesizer, which, like the square-wave generator, is directly connected to a dual-beam oscilloscope via inputs U_1 and U_2 . An ultrasonic wave consisting of echo pulses U with a frequency of $f=1/T$ and a transit time T of the ultrasonic wave through a polymer nanocomposite of thickness h is applied to input U_1 . A number of calibration marks n U_{MK} with a frequency of f_{MK} from the frequency synthesizer is applied to input U_2 . The peak of each echo pulse U coincides with the peak of the U_{MK} harmonic oscillations.