

研究論文

レーザープローブ法を用いた固体欠陥試料の
超音波振動速度イメージング

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Ultrasonic Vibration velocity Imaging for Solid Defect Samples Using Laser Probe Method

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Laser probe method with constant voltage drive for a piezoelectric transducer is applied to the non-contact ultrasonic imaging method for evaluating defect in a solid sample. Constant voltage driving method for a piezoelectric transducer by the rectangular pulse voltage is the same method as our previous paper^{6,8)}, and can suppress the mechanical ringing of the piezoelectric transducer. The sample to be measured is attached to the vibrating surface of the piezoelectric transducer and is driven by one cycle sinusoidal wave. Ultrasonic wave signal is observed by the laser probe method. Inverse Radon transform is used to obtain the three-dimensional (3D) image after horizontal (2D) projection data acquisitions. As an experimental result, the shape edge of side wall of hole in the acrylic disk sample is imaged, and thus the feature and possibilities of detection method for defect are suggested.

Keywords : Ultrasonic imaging, Constant voltage drive, Laser light probe method, Ultrasonic wave, Piezoelectric transducer