

レーザ光を用いた超音波伝搬のプロービングによる  
固体試料中の残留応力の一評価法

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An Method for Evaluating Residual Stress in the Solid Material by Observing  
Ultrasonic Wave Propagation with Laser Probing Method

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Laser light probing method is introduced in the ultrasonic measurement system to detect and identify the position of residual stress. Acryl sample having 1.5mm slit and compression or tension stress is used to demonstrate the usefulness of the method. The laser light via the APD sensor and vector signal analyzer (VSA) analyzed fundamental and second harmonic component including in the ultrasonic wave detected by the APD. Second harmonic component increases around the residual stress and rapid variation area of stress is revealed. Possibility of novel evaluation of the residual stress by the laser light probing method is also demonstrated.

**Keywords** : laser light probing method, residual stress, ultrasonic wave, second harmonic wave