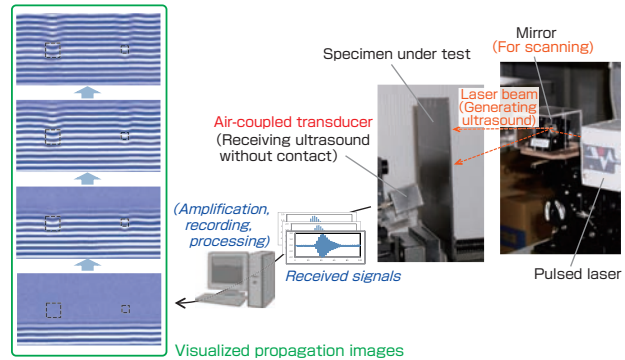


Application of air-coupled sensor to the laser ultrasonic visualization equipment for flaw inspection of structures

A contact-free visualization system of ultrasound for flaw inspection

Nondestructive inspection (NDI) is important to ensure the safety of structures such as power plants, vehicles and infrastructures. Ultrasound is one of the NDI techniques majorly used. Our group has already proposed a ultrasound generation laser scanning system for visualizing ultrasound waves propagating on any shape as an animation image, where flaw can be quickly and easily detected. Recently, we have focused on making the system completely contact-free by applying an air-coupled ultrasound transducer as a receiver, instead of a contact piezo-electric receiver. An advantage of the contact-free receiver is that it makes it easy to move the sensing point, and, as a consequence, images from different points of view can be obtained. Reductions of the effects of surface conditions of specimens and contact situations of the receiver are also advantages of the contact-free receiver. Improvements on noise reduction, higher sensitivity, and signal processing are now in progress aiming at more clear and speedy visualization.



Outline of non-contact visualization of ultrasound propagation with air-coupled sensor and an example of visualized propagation images

The visualized images show the propagation of ultrasound on a carbon fiber reinforced plastic with delaminations. Area of visualization is 50×100 mm. Propagation of 320 kHz A_0 Lamb wave is visualized with receiving angle 14.6°. Sizes of the delaminations shown with dotted lines are 10 mm sq.(left) and 5 mm sq.(right).

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In Brief

Cooperation with Mongolia in Geological Survey and Mineral Resource Research

On July 30, 2010, AIST concluded a comprehensive memorandum of understanding (MOU) on cooperation in geological survey and mineral resource research of Mongolia with the Ministry of Mineral Resources and Energy of Mongolia and Japan Oil, Gas and Metals National Corporation (JOGMEC) during Mongolian Minister Dashdorj Zorigt's visit to Japan.

With this conclusion, the three parties aim to strengthen reciprocal cooperative relations in geological survey and mineral resource projects, and will discuss specifics of cooperative projects for developing rare metal resources which are important for high-tech industries. Especially AIST, with its experience of research and technological support concerning mineral resources of Mongolia since the days of the Agency of Industrial Science and Technology, will promote the cooperative project mainly in scientific elucidation and prehension of mineral genesis, properties, and resource potentials of deposits that are the basis of exploration.



AIST President Tamotsu Nomakuchi (left), Minister Dashdorj Zorigt (center), JOGMEC President Hirobumi Kawano (right)