

OKABE, Y. LAB.

[Health Monitoring Systems for Composite Structures Based on Ultrasonics]

Department of Mechanical and Biofunctional Systems

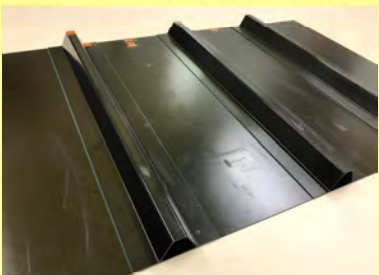
Smart Material Systems

Department of Systems Innovation

<http://www.okabeylab.iis.u-tokyo.ac.jp>

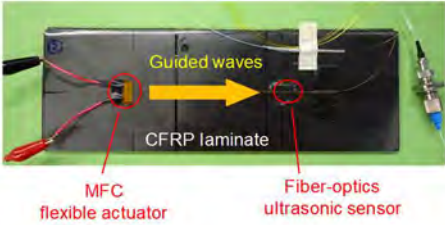
Lightweight composite structures have been applied to airplanes and automobiles. For the health diagnostics of the structures, we are developing structural health monitoring systems with optical fiber ultrasonic sensors and non-destructive inspection techniques using laser ultrasonics.

Lightweight Composite Structures

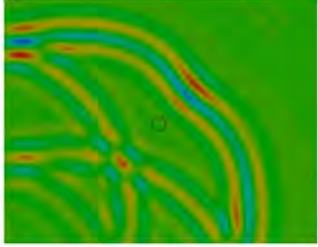


CFRP skin/stringer structural elements

Structural Health Monitoring Using Guided Waves

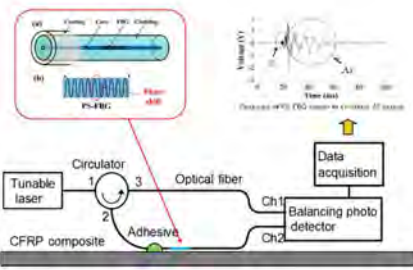


Built-in ultrasonic propagation system using flexible devices

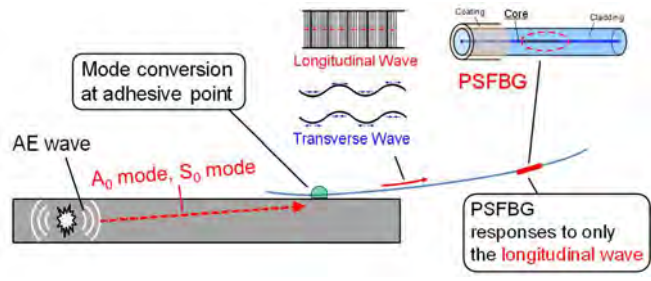


Modeling of impact damage in CFRP for FEM simulation of wave propagation

Development of Fiber-optic Ultrasonic Sensor System for Remote AE Measurement

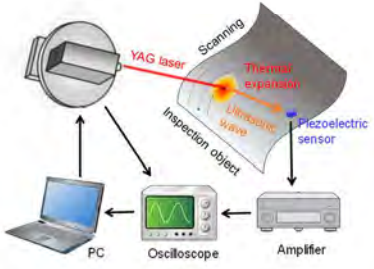


PSFBG high-sensitive fiber-optic ultrasonic sensor system

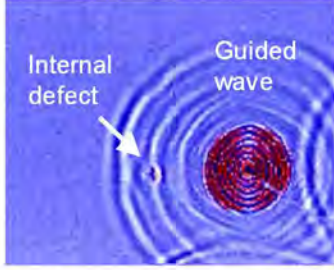


Remote sensing method to measure AE waves at high temperature

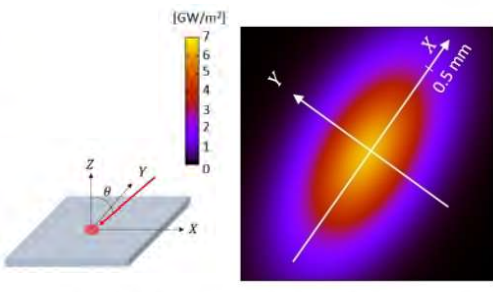
Non-destructive Inspection Based on Laser Ultrasonics for Composites



Laser ultrasonic visualizing inspector (LUVI-CP, Tsukuba Technology Co., Ltd.)



Visualization of wave propagation



Numerical simulation of laser ultrasonics