

# Enhancement of product durability and usability for resource-efficient society

## Evaluation of Microscale Degradation based on High Sensitivity Measurement of Thermal Wave Propagation Behavior

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### Summary :

In recent years, composite materials have been widely used in spacecraft, aircraft, automobiles, etc., but elucidation of the mechanism of fatigue and deterioration phenomena of composite materials is indispensable for long-term use.

In this research, we focused on the fact that molecular-scale deterioration in composite materials appears prominently in changes in thermal propagation behavior. We will establish a method to accurately and quantitatively evaluate each deterioration mode hidden in the molecular scale, such as cracks, fiber damage, and interfacial peeling, as a change in thermal propagation behavior. Furthermore, by combining with various strength of materials characterization methods and clarifying the relationship between thermal propagation behavior and composite material strength, we will establish a method that can finally estimate minute composite material deterioration in a non-destructive manner.

