

The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

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Method for weak bond detection and Prognosis in Structural composites

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TECHNOLOGY NEED

The need to reduce weight and cost of aerospace, automotive and marine constructions, has led to a significant rise in the use of composite components and adhesives. The use of adhesives not only helps in reducing weight and cost, but also helps prevent detrimental stress concentrations and cut fibers associated with the use of traditional fasteners at joints.

However, the lack of methods to measure the integrity and durability of adhesively bonded joints, or for the non-destructive evaluation of the strength, life and performance of adhesive bonds are some of the challenges preventing the wide spread use of adhesive bonding.

INVENTION DESCRIPTION/SOLUTION

UTA researchers have developed a method of using Broadband Dielectric Spectroscopy (BbDS) to detect the strength and integrity of adhesive bonds in composite components. This is achieved by measuring dielectric properties of the adhesively bonded joint, and showing direct relationships to the strength of the adhesively bonded structure, and also showing unique links between changes in the bulk dielectric response and remaining strength and life.

APPLICATIONS

- Aerospace
- Automotive
- Biomedical/dental
- Consumer electronics
- Construction
- Marine
- Sports equipment

KEY BENEFITS

- Detection of durability of bonded joints.
- Non-destructive evaluation of bond strength.
- Performance of adhesive bonds
- Better quality checks in manufacture process

STAGE OF DEVELOPMENT

Prototyped and tested

INTELLECTUAL PROPERTY STATUS

Patent pending



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