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#### ACCEPTED MANUSCRIPT

### Piezoresistive Properties of Resin Reinforced with Carbon Nanotubes for Health-Monitoring of Aircraft Primary Structures

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#### Abstract

A study concerning the development of embedded sensors by using polymer composite filled with carbon nanotube for structural health monitoring in aeronautic structural parts is presented. The relationship between the mechanical stress applied, both in axial and flexural mode and the electrical properties of an epoxy composite, are analyzed. The electrical resistance or impedance of the nanocomposites samples are strongly affected by the applied mechanical stress. The present work aims at investigating the possible use of the nanotechnology towards the development of embedded sensor systems in composite structures having self-diagnostic functionalities and capability of provide real-time structural health monitoring.

#### **Keywords:**

- A. Carbon-carbon composites (CCCs)
- A. Smart materials
- B. Electrical properties
- D. Mechanical testing

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