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Minisymposium title: Composites and Non-Destructive Evaluation

Due to their high strength and low weight features, composites play nowadays a key role in the construction of aircraft, spacecraft and civil engineering works. Composites are made from at least two distinct materials that maintain their own structures and properties, while the desired average characteristics are enhanced by appropriate mixture of them. During service life, composite structures can undergo various disorders ranging from localized damage to debonding which may reduce substantially their performance and cause catastrophic failure.

Damage detection in composite structures is mostly difficult because of the extreme sensitivity of sensing signal to the microstructure configuration which is basically heterogeneous with high damping properties. This makes small damages scarcely detectable and even invisible. Various methods of damage inspection based on non-destructive testing are currently in use for evaluation of composites structures. However, more accuracy is yet to be expected from actual processes in order to fix the most adequate method, to be used with regards to best predictions, for a given application.

The aim of this Minisymposium is to bring together researchers and experts from across the field of composites and non-destructive testing in order to highlight recent developments being made regarding Computational Mechanics and expected to yield real improvement in damage detection in composite structures. The event will contribute to discuss the best existing ideas and technologies in this field and participants will have the opportunity to make a clear understanding about the different techniques and their reliability which can help them making the right choice for inspection commission of composite structures.

The main topics that will be covered in this Minisymposium include:

- Numerical modeling in composites
- Assessment of delamination and debonding in composites
- Non-destructive evaluation in composites
- Wave propagation and ultrasounds in composites
- Tomography in composites