

# OPTIMIZATION OF THE VIBRATION ISOLATION PERFORMANCE OF MECHANICAL AND CIVIL STRUCTURES USING ADVANCED COMPOSITE MATERIALS

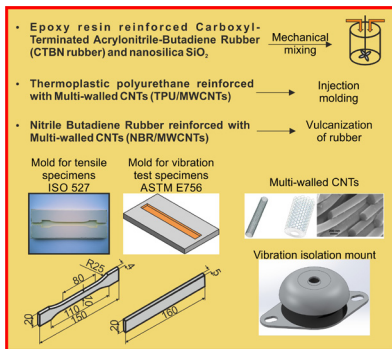
## Short Description

The dynamic behavior is dictated, besides the construction characteristics, from the foundation of the structure. The foundation isolates firstly, the dynamic strain induced on the structure (civil) from the surrounding and secondly, the vibration that itself generates and spreads on the mechanical structures in its vicinity. The objective of the research is to demonstrate an efficient modal testing method for the investigation of the optimal dynamic mechanical properties of polymeric nanocomposite materials and their application as structures isolators.

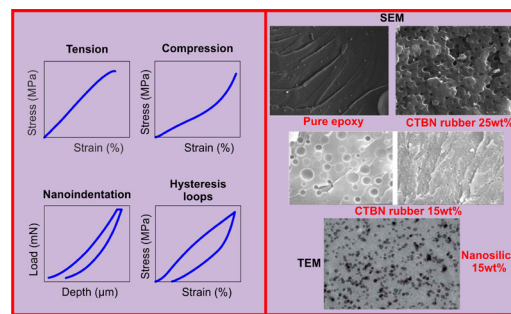
## Application Field

Nanocomposite elastomers can be applied as vibration isolation materials in:

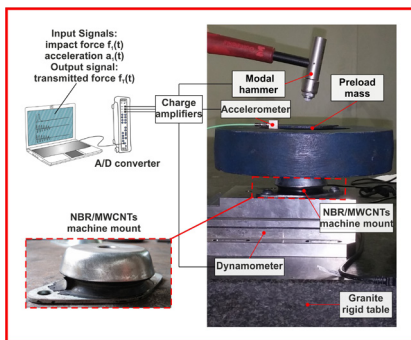
- machinery
- transportation
- construction (buildings, bridges)



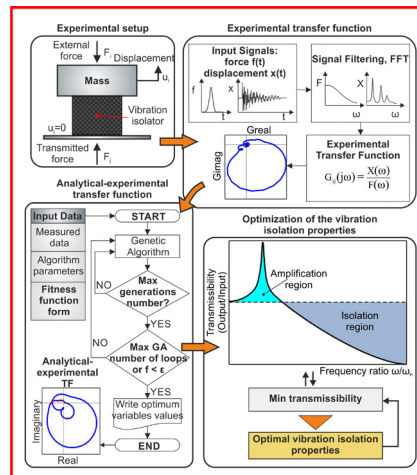
Materials and manufacturing methods



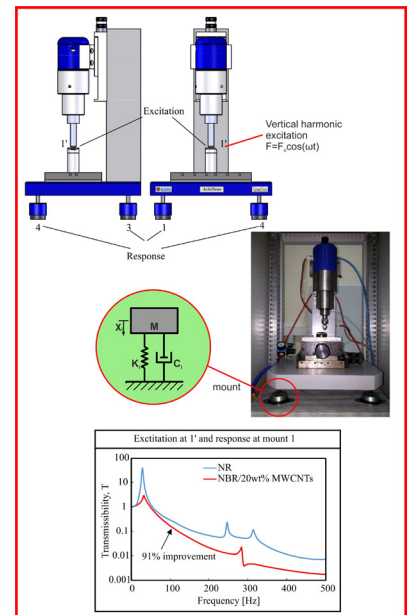
Mechanical behavior of nanocomposite materials



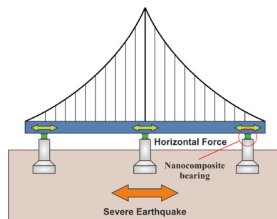
Typical modal testing setup



Proposed analytical-experimental modal testing method for the determination of optimal vibration isolation characteristics



Comparison between commercial natural rubber mounts with NBR/MWCNTs nanocomposite mounts on a vertical impact testing machine



Seismic isolation of a bridge - High stiffness and high damping nanocomposite elastomer bearing

## LABORATORY FOR MACHINE TOOLS AND MANUFACTURING

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