

# **Ceramic Inclusions/Epoxy Resin Hybrid Nanodielectrics: Development, Characterization and Multi-Functional Performance**

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In our days the scientific impact and technological demand of nanostructured and stimuli responsive materials is high and globally appreciated.

Multifunctionality is the combination of various desirable properties in a material or materials' system, targeting to develop a single material/system exhibiting all necessary responses under various loading conditions. Mechanical sustainability, suitable thermal response, tunable electric conductivity, variable electric polarization/dielectric permittivity, magnetic properties, thermally induced phase changes could be parts of the overall multi-functional behaviour [1-3].

The challenge of the present study concerns the development of a material/device exhibiting thermo-mechanical endurance, variable polarization/tunable dielectric response, adjustable conductivity, varying magnetic performance, and energy storing/recovering efficiency. For this reason, hybrid nanodielectrics of polymer matrix/ferroelectric particles ( $\text{BaTiO}_3$ )/magnetic nanoparticles ( $\text{Fe}_3\text{O}_4$ , or  $\text{ZnFe}_2\text{O}_4$  or  $\text{SrFe}_{12}\text{O}_{19}$ ) were developed and studied under various loading conditions/external stimuli.

## **References**

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