

Multifunctional Nanocomposites for Self Health Monitoring

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The objective of this research is to provide greater understanding of the complex phenomena that take place at the nanoscale level in multifunctional nano-tailored composites. Specifically, attention will be given to the research activities and achievements in my laboratory in developing multifunctional nano-tailored adhesive bonds for aerospace applications. In particular, we introduce this multifunctionality, and a certain level of intelligence, by homogeneously dispersing carbon nanotubes, and other nanofillers, into high strength thermoset epoxy adhesives. Application of molecular dynamics and atomistic based continuum techniques to treat this class of intelligent multifunctional materials will be discussed and their viability for in-situ diagnostics examined.