## عنوان مقاله:

Fabrication and Characterization of Carbon Nanofiber Hybrid Laminates

## محل انتشار:

دومین کنفرانس بین المللی کامپوزیت (سال: 1389)

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## خلاصه مقاله:

Multi-walled carbon nanotubes (MWCNTs) are a new class of materials widely used for their unique electronical and mechanical properties related to their nanometric size. MWCNTs are expected to be useful for polymer reinforcement. In the present work, nanofibersare synthesized via electrospinning process. Asolution of MWCNT dissolved in ethanolis added with deionized H2O and Polyvinyl Pyrolidone (PVP). The solution is ultrasonicated to obtain homogeneous MWCNT-PVP Nanofibers using electrospinning as a high voltage electric field process. The scanning electron microscopy images show that fine MWCNT-PVP nanofibers are clearly synthesized and carbon nanofibers are covered obviously with PVP particles. The produced nanofibers are used to reinforce epoxy resin and to form a composite layer. This layer is combined with some other layers reinforced by woven carbon and Kevlar fabrics to obtain hybrid laminates. Tension tests are performed to characterize the mechanical properties of the laminates. The experimental results show that the thin nanofiber layer has low reinforcing effect on the laminate properties. This is attributed to the improper method of nanofiber fabrication used in this work resulting in discontinuous fibers

## کلمات کلیدی:

MWCNT-PVP nanofibers; electro spinning process; hybrid laminates; characterizationtests; FEM modeling