

PROJECT FACTS

UNIVERSITY OF KENTUCKY CENTER FOR APPLIED ENERGY RESEARCH

SPONSORS

US Army AMRDEC
Redstone Arsenal, AL
35898

Materials Sciences Corp.
Horsham, PA 19044
University of KY CAER

PROJECT VALUE

\$55,000

CONTACT

Matthew Weisenberger
UK CAER
2540 Research Park Dr.
Lexington, KY 40511
Tel.: (859) 257-0322
Fax: (859) 257-0220
matt@uky.edu



CARBON MATERIALS

Electromagnetic Interference Shielding Effectiveness

Electromagnetic interference (EMI) is a disturbance in an electrical circuit often caused by the radiation of another electromagnetic source. For proper circuit function, EMI shielding of circuitry is normally employed. Common commercial materials for EMI shielding are centered on high conductivity metals, such as aluminum, copper and silver. As an alternative, the EMI shielding effectiveness (SE) of (carbon nanotube filled epoxy)-(carbon fiber) composite panels is being explored. Carbon fiber/epoxy composites are light-weight alternatives to metals, but significantly less conductive. Various approaches are being taken to increase the EMI SE of the composites, including addition of carbons to the matrix, coatings, and interlaminar fillers. An all-carbon system can mitigate galvanic corrosion, which is another problem with multi-metal systems. All panels were tested by a HP 8753D Network Analyzer per ASTM D4935-99. Panels of varying thicknesses were analyzed. The measured SE of (multi-walled carbon nanotube-filled epoxy) carbon fiber composites are compared to baseline commercial carbon fiber panels used in electronics and the aerospace industry.

All EMI SE samples are machined and tested in house to fit the specs of the ASTM method.

