

## DC ELECTRICAL CONDUCTIVITY AND QUANTITATIVE EVALUATION OF FOUR DISPERSION METHODS OF VGCNF IN EPOXY RESIN

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Ultimate performance of polymer nanocomposites strongly depends on the dispersion and distribution of the VGCNF in the polymer matrix [1]. The quality of nanofiller dispersion in the polymer matrix is directly correlated to its efficiency in the improvement of mechanical, electrical and thermal properties, among other [2-7]. The properties of a composite are also intimately linked to the aspect ratio and surface-to-volume ratio of the filler [8].

The aim of this work is to quantitatively analyze the dispersion ability of four methods for the preparation of vapor growth carbon nanofiber in epoxy composites and to evaluate the relation with the DC conductivity. The dispersion was analyzed by transmitted light optical microscopy and greyscale analysis. The dispersion method strongly influences the overall composite electrical response. No relationship was found between the values of the electrical conductivity and the greyscale analysis of the dispersion achieved by the different methods. In this way, the used method for quantification of the dispersion is appropriate for the comparison between the different methods at the lengthscale of 0.13  $\mu\text{m}$ , but this scale is above the relevant one for the determination of the conductivity characteristics.

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