



SP3.02

## **Control of Percolation Behavior through Nanoparticle Induced Self Assembly in Polymer-Carbon Black Composites**

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We discovered that if carbon black nanoparticles (CB) are incorporated into a polymer matrix together with an optimum concentration of organoclay nanoparticles (nanoclay), percolation becomes sudden and the threshold shifts to a low CB content while the slope is reduced. This was found to be a direct result of nanoclay enhanced long range percolating conductive network. This novel phenomenon does not fit into any known categories of percolation behavior in the published literature. In this paper, we will present our results on the influence of nanoclay and CB concentrations on the electrical conductivity of compression molded as well as injection molded parts.