

# Dispersing Carbon Black Nano-particle in Photosensitive Polymer and Its Application in Color TFTFPD

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## Extended Abstract

Carbon black (CB) consists of primary particles with an average diameter ranging from a few nanometers up to 100 nm, depending upon the mechanism of generation [1]. CB nanoparticle (NP) is of great interest due to its variety of uses, including applications in the anti-corrosion coatings [2] and nanocomposites [3]. Additionally, the internal structure of carbon black particles considerably influences the optical and electrical behavior of the material, apart from the shape and agglomeration state of the primary particles. This paper aims to study the dispersion of CBNP in photosensitive polymer for the application in black matrix (BM) on color filter (CF) of thin film transistor flat panel display (TFTFPD). Carbon black nanoparticles were firstly wetted by the co-solvent composed from propylene glycol monomethyl ether acetate with normal butylalcohol to enhance the permeability of agglomerated CB particles; polymeric dispersant was then added to stable CBNP suspension in the solution after milling process; finally, the dispersed solution was blended with cresol novolac epoxy acrylate, dipentaerythritol penta-hexa-acrylate, ethanone, 1-[9-ethyl]-6-(2-methylbenzoyl)-9H-carbazole-3-yl]-1-(O-acetyl oxime), and 2-benzyl-2-N, N-dimethylamino-1-(4-morpho-linophenyl) butanone for the photosensitive polymer film containing CBNP. To character the optical density, electrical resistivity, and photolithography of as-fabricated polymer film containing CBNP, the transmission densitometer, resistivity meter, differential photo calorimeter, and wedge curve analysis were respectively employed in this work.

## References

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