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Abstract

The study was divides into two parts; the first part used the FEG-TEM and Raman Spectrometer to analyze the characteristics of (CNTs) structure that prepares by arc discharge method . In the second part, the medium of the polarity and un-ploarity solution were investigated by CNTs paste. It includes zeta potential, viscosity and height of subsidence. The CNTs stability of different solution, electrical behavior and size distribution would be applied by DLVO theory. The study will try to find the best dispersion solution, dispersant, low viscosity of paste which applied in the screen painting. In addition, the field emission property would be measured.

The results show that, the CNTs structure that make by arc discharge are the both ends close and multi-wall carbon nanotube (MWCNT). The range of CNTs length is from few micrometers to several micrometers, the diameter is 20 nm to 50 nm and its crystal has the high Highly Oriented Pyrolytic Graphite (HOPG) structure. But the graphite structure exist parts of carbon nanoclusters and amorphous carbon. The cationic surfactant PEI, D-184 and anionic surfactant SDS show the good dispersed behavior for the CNTs paste.

By adding of the dispersants the CNTs paste show the small size agglomerate , stability and uniform size distribution through OM, subsidence and particle size analyzed. Among the dispersant SDS has the best result. After through FTIR and TGA know CNT and surfactant can produce the functionalization .

In the Manufacturing process,The screen printing paste using the planetary ball grinder and adding the dispersant have good field emission characteristic than the other. As the result of I-V measurement CNTs systhesized by arc discharge showed the lowest turn-on-filed (Eto) of 2.75 V/um and the threshold filed (Ethr) of 4.8 V/um . However, CNTs adding SDS raise the current density of the field emission as the degree of even isn’t reducing. Synthesis experiment result demonstration is best by the SDS performance.
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