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## **The effect of annealing temperature on electrical and optical properties of transparent and conductive thin films fabricated of multi-walled carbon nanotube/Ag nanowires**

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### **Abstract**

Transparent and conductive thin films of multi-walled carbon nanotube/ Ag nanowires were fabricated using spin coating technique. In order to improve the electrical conductivity and the optical properties, the layers were annealed from room temperature to 350 °C for 30 minutes. The measurements revealed that annealing caused electrical conductivity of fabricated thin layers to be improved. The optimum annealing temperature for improving these properties was deduced 285 °C. For all different film thicknesses from about 89 to 183 nm it was observed that the presence of nanowires has improved the film's electrical conductivity in all temperatures. The best ratio of DC conductivity to optical conductivity of the films, which is accounted as films figure of merit, was measured at 285 °C for all Ag percentages. Sheet resistance and optical transmittance were measured by four-point probe technique and UV-Vis spectrophotometer, respectively.

**Keywords:** sheet resistance, thin film figure of merit, four-point probe, UV-Vis spectrophotometer

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