INTRODUCTION

It is well known that the percolation threshold of CNT-based composites depends on the length and purity of nanotubes /7/. We studied the electrical properties of commercially available SWCNT TUBALL® added in small amounts into some epoxy compounds. For comparison, we measured the properties of composites with commercially available MWNTs. We also prepared SWCNT-based transparent conductive films and measured their transmittance and sheet resistance. The figure of merit (FOM) was evaluated out of those measurements. FOM turned out to be comparable to the highest values reported to date.

The characteristics of SWCNT TUBALL® produced by OCSiAl are presented in the table.

METHODS

We have studied some properties of SWCNT TUBALL® by the use conventional TEM and SEM methods as well as Raman and TGA spectroscopies. SWCNT TUBALL® were used as-produced by OCSiAl without further purification. Horn sonicator with the power 120 W was used to disperse CNTs in epoxy compounds. Two and four-probe measurements were performed in order to measure electrical conductivity of composites. The PET film was used as a substrate of TCF. The conductive films on the PET surface were made by the use of spray coating. Additional treatment by nitric acid was used to reduce the surfactant via ultrasound bath as ink for the spray coating.

CONCLUSIONS

We have studied the electrical properties of SWCNT TUBALL® both added in small amounts into some epoxy compounds and used for thin conductive film production. The percolation threshold values as low as 0.001% were obtained in composites. In all cases, SWCNT exhibited properties 10 to 100 times superior to those obtained with some commercially available MWNTs. In all cases, SWCNT exhibited properties 10 to 100 times superior to those obtained with some commercially available MWNTs.

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REFERENCES

3. David S. Hecht et al. High conductivity transparent carbon nanotube films deposited from supercritical Nanotechnology 22 (2011) 169501