Single-wall carbon nanotube meshes

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Fundamental studies on single-wall carbon nanotube (SWCNT) have continued to grow due to the outstanding properties such as high electrical conductivity, high thermal conductivity, excellent mechanical property, and so on. However, SWCNT of high crystallinity is obtained in the bundle form, perturbing the application. Surfactants have been widely used for dispersion of the SWCNT bundles. However, the surfactant molecules are strongly bound on the SWCNT surface, deteriorating the excellent properties of the intrinsic SWCNT.

Kukobat et al developed an efficient inorganic dispersant of Al/Zn complex for SWCNT dispersion, which can be easily removable after drying without the deterioration of SWCNT.[1,2] Then, the Al/Zn complex-aided SWCNT inks have enabled to produce various types of SWCNT-based materials.

In this study, we will show the effectiveness of the Al/Zn complex-aided SWCNT inks for preparation of the SWCNT films on the porous support. The prepared SWCNT films have the nature of meshes, depending on the coating treatment. We studied the stability and structure of the SWCNT meshes on the different porous supports such as polycarbonate, cellulose ester composite, and polyimide. We will show the characterization results of the SWCNT meshes on the different support from four probe electrical resistivity measurement, Raman spectroscopy, and Scanning electron microscopy.

Reference
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