

Single-walled Carbon Nanotubes Enveloped by Dew-shaped Polystyrene: Their Electrical and Physical Properties, and Dispersion States in Both Organic Solvents and Water

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Single-walled carbon nanotubes enveloped by dew-shaped polystyrene molecules were prepared by in situ miniemulsion polymerization of styrene. They were dispersed in water in the existence of surfactants, which were used during the polymerization. After surfactants were removed, they were soluble up to 5 wt % in a good solvent of polystyrene, and showed no precipitation for 700 hrs. A film was made by coating the solution. The electrical conductivity of the film was affected by the amount of polymer encapsulating nanotubes. The electrical conductivity and storage modulus were improved as the amount of polystyrene decreased.

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