Selective Precipitation of Surfactant-Dispersed Carbon Nanotubes

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Dispersion with surfactants is ubiquitous in colloidal processing of single-wall carbon nanotubes (SWCNTs). Many technologiess, from chromatography to ultracentrifugation, have been developed for fractionating surfactant dispersed SWCNTs by length and chirality. While these techniques can achieve high resolution, they can be time consuming, expensive and difficult to scale up. We report a simple new technique to fractionate these SWCNTs using selective precipitation. The precipitation results from self-assembly into clusters, which is selective in nanotube length or chirality. This technique does not rely on any piece of equipment, yet can achieve satisfactory resolution. We anticipate that it may be particularly useful as a pre-purification step for a variety of advanced fractionation techniques.