

Progress in development of near-IR spectroscopy as a tool for purity evaluation of bulk quantities of single-walled carbon nanotubes; related advances in SWNT synthesis, purification and applications

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Development of efficient metrology for assessment of quality of SWNT material is a necessary component for continuing progress in science and applications of SWNTs. Majority of applications requires purity evaluation of the bulk quantities of SWNT material; in this case microscopy techniques such as SEM and TEM have significant limitations. Recently we introduced solution phase near-IR spectroscopy for purity evaluation of bulk quantities of SWNTs. Here we will review further development of this technique, its relationship to the other commonly used analytical techniques and utilization of our method for optimization of the synthesis, purification and applications of SWNT material. Principal limitations of near-IR purity evaluation technique and development of absolute standard of purity of SWNTs will be discussed.