

Optical Behaviors of Single-Wall Carbon Nanotubes in Complex Environments

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The optical properties of single-walled carbon nanotubes (SWNTs) offer great promises. However, the realization of their potential is limited by degree of interactions with their immediate surroundings. Here, we present an innovative approach to control and manipulate the intrinsic optical properties of SWNTs to develop optical sensors as a direct or indirect means to measure physical changes and convert such a response to a signal. For instance we will show energy transfer between SWNTs and organic molecules in complex environments. Moreover, we will probe the mechanism of photoluminescence brightening via surfactant restructuring using time-resolved PL measurements and show an original way to visualize complex fluid behaviors controlling the intrinsic optical properties of SWNTs.