

Carbon Nanotube Sorting via Molecular Interactions in Liquid Phases

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Chirality control is one of the most challenging problems in the carbon nanotube field. Over a decade ago, we and others began to explore separation of single-wall carbon nanotubes by exploiting chirality-dependent molecular interactions in liquid phases. By now, efforts from many groups around the world have resulted in a number of effective ways to achieve metal/semiconductor separation and single-chirality purification, enabling fundamental studies and application development. In this presentation, I will review various separation methods developed so far, discuss common physical mechanism underlying these methods, and highlight a polymer-based liquid two-phase extract method we have recently reported (J. Am. Chem. Soc. 2013, 135, p6822; Adv. Mat. 2014, DOI: 10.1002/adma.201304873). I will give examples to illustrate the versatility of the new method, and provide an outlook for its future development to enable carbon nanotube-based applications.

