

# **DNA-wrapped carbon nanotubes for sorting and multiplex optical sensing**

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Many fundamental studies and technology development rely on structurally well-defined carbon nanotubes as well as corresponding coating layers. DNA-wrapped carbon nanotube (DNA-CNT) library has been used successfully to select structurally well-defined hybrids. In this talk, I will present our recent work in developing new aqueous two-phase separation systems for the selection of structurally defined DNA-CNTs, as well as our effort in revealing DNA sequence selection rules for CNT sorting. The utility of DNA coating goes well beyond CNT sorting, for it provides a means to control CNT interaction with other molecules. To elaborate on this point, I will present a “molecular perceptron” proposal based on the optical response from  $\sim 10^3$  independent DNA-CNT structures to sense the metabolome of a biofluid in its entirety.