

291k Modulating the Optical Response of Single Walled Carbon Nanotubes to Specific Molecular Adsorption

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Near infrared (n-IR) light between 0.9 and 1.3 eV, as the basis for molecular detection, has important biomedical applications because of its greater penetration and reduced auto-fluorescent background in thick tissue or whole blood media. However, few photostable, organic molecules absorb or emit in this region. Carbon nanotubes individually suspended in solution have n-IR emission that responds to changes in the local environment but does not photobleach. We explore new routes to engineer selective coatings onto the nanotube surface that maintain colloidal stability and fluorescence emission. We show that target analyte adsorption at the nanotube surface quantitatively modulates the nanotube optical properties.