**595e Near Infrared Optical Biosensors Based on Single Walled Carbon Nanotubes**

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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. We elucidate the mechanisms of signal transduction for solution phase, near-infrared sensors using single walled carbon nanotubes that modulate their emission in response to the adsorption of specific biomolecules. Carbon nanotubes have a tunable n-IR emission that responds to changes in the local dielectric function but remains stable to permanent photobleaching. We examine new routes to engineer selective coatings onto the nanotube surface and elucidate the mechanisms of optical modulation for sensor applications. As an application, β-D-glucose sensing is examined as a model system. We show that a target analyte can interact with these functional groups to quantitatively modulate fluorescent emission.