We thank the editors and reviewers for their careful reading and insightful comments and recommendations. Below is a list of each comment followed by a detailed response and description of modifications made to the manuscript.

***Editorial comments:***

***Please use the attached manuscript as it represents the most current version of the manuscript and is the one that was sent out for peer review.***

*1. Formatting: ­Please define all abbreviations at first occurrence (ie nIR, CoPhMoRe, TIRF etc.). ­Please use “x g” rather than cfg.*

We have modified the manuscript to properly define all acronyms.

*2. Please fix the following for grammar: ­2.1 – “growth are” ­2.2.6, 2.3.6 – Should be “spectrophotometer” ­Line 434 – “FITC add binding functionality”*

These grammatical errors are now corrected in the manuscript.

*3. Additional detail is required: ­1.5.3 – Is the precipitate filtered first before dissolving in DMF? ­2.1.2 – What are the sonication settings? ­2.2.5 – What happens to the pellet? Is this discarded?*

In the manuscript, we clarify that the precipitate should be filtered before redissolving. Additionally, we have included more information regarding sonication settings as well as whether the pellet should be discarded.

*4. Please remove commercial branding:*

*­CoMoCAT – 2.1 ­HiPCO – 2.1, 2.2.2, 2.3.1, Figure 1 and 2 legends, Discussion ­Neutravidin ­ 3.1, 3.1.2, 3.2.5, 3.2.6 – Please use a generic term or abbreviate as NAV after first occurrence.*

Although the terms CoMoCAT and HiPCO are trademarked, they are the colloquial terms used exclusively in academic literature to refer to the types of SWNTs produced by particular manufacturing processes. In the manuscript, we clarify by clearly defining the meaning of each acronym on page 9 (Results section) and on page 12 (Discussion section) of the preprint. Additionally, we added a definition of Neutravidin (page 6, section 3.1.2) and abbreviated subsequent mention using the acronym as suggested.

*5. Results: ­Please discuss what the results mean in the results section. What is the interpretation of the data shown in Figures 3 & 4? ­Figure 3 ­ Please define error bars in the figure legend (SD, SEM, etc.).*

We have included more discussion regarding the interpretation of the results presented in Figures 3 and 4. We have also included a label for the error bars in Figure 3.

*6. Discussion: Please discuss the significance with respect to alternative methods and provide independent citations. Please also discuss the critical steps and limitations of the method.*

We more clearly outline the advantages of this method compared to covalent modification and included several independent citations on page 12 (Discussion section). Additionally, we more clearly highlight sonication as the critical step in the discussions section on page 11. A brief discussion of current limitations was also added.

***Reviewers' comments: Reviewer #1:****Manuscript Summary: In this method manuscript Jackson T et al. described a protocol to engineer the corona phase of nIR fluorescent single walled carbon nanotubes using amphiphilic polymers and DNA to develop sensors for molecular targets without known recognition elements.*

*This is manuscript would have wide range of readership as researchers are keen to investigate on CNT for biological application, especially for imaging. Therefore CNT still is a growing platform. Although some other researcher already have established protocol for CNT suspensions, however amphiphilic polymers suspension would be interesting. Therefore I would highly recommend this method manuscript for publication.*

*Major Concerns:*

*Authors used absorbance at 632 nm quantified the concentration of suspended SWNT according Ref. 14. However, CNT (6,5) has strong abs at 990nm rater than 632nm. Zheng M., Nano Res (2008) 1: 185­194 and in SI of Mangalum A., J. Am. Chem. Soc., 2013, 135 (7), pp 2451­2454 Therefore I would highly recommend having wide range (200­1200nm) abs spectra in fig. 2a*

We appreciate the detailed feedback and have updated the absorbance spectra plots to the range 200-1200nm. Regarding the absorbance wavelength used herein, absorbance at 990 nm is specific to that particular chirality of SWNT. In the methods presented here, we use mixed chirality samples, which partially obscures the absorbance peaks of individual chiralities. Additionally, we are interested in a measurement of total SWNT concentration, not just a particular chirality. For this reason, we use absorbance at 632 nm (a global absorbance minimum) and the empirically derived extinction coefficient (Zhang *et al*. 2013) to estimate total SWNT concentration for our multi-chirality samples.

*Minor Concerns:*

*Add references for DNA­CNT 1. Zheng M., Nano Res (2008) 1: 185­194 2. Mangalum A., J. Am. Chem. Soc., 2013, 135 (7), pp 2451­2454*

We have added these references to carbon nanotubes in the introduction as they relate to SWNT chirality separations that would be of interest to readers wishing to use ratiometric single-chirality sensing.

*Additional Comments to Authors:*

*N/A*

***Reviewer #2:***

*Manuscript Summary:*

*The authors present a protocol for engineering the corona phase of NIR fluorescent single­walled carbon nanotubes (SWNTs) using amphiphilic polymers and DNA to develop sensors for molecular targets without known recognition elements. The corona phase molecular recognition using SWNTs is timely and very interesting. Along with the unique optical properties of SWNTs, this technique would find wide applications in the future. But, there are several major concerns that should be addressed in the article.*

*Major Concerns:*

*­The Introduction should be rewritten. The Introduction doesn't well present the current development of SWNT sensing technologies. The corona phase molecular recognition is not clearly or adequately described. For example, the advantages described for the corona phase molecular recognition is the general advantages of SWNTs rather than those of the corona phase molecular recognition. Recent key references are not cited; most references cited are published before 2005.*

The introduction has been rewritten to better review SWNT sensing technologies as well as to more clearly introduce and explain corona phase molecular recognition.

*­The Introduction should better describe what techniques are described in the protocol. The authors prepared several molecules to disperse SWNTs. But, it is not clear why they choose them and how these molecules make SWNTs sensors. ­The advantages of the corona phase molecular recognition over the conventional molecular recognition are not well described. The limitations of the corona phase molecular recognition are not described.*

We have improved the introduction by describing the procedures and techniques used in the protocol. Additionally, we discuss the specific molecules used and how one in particular is used for dopamine detection. The introduction also now includes a detailed discussion of the advantages as well as limitations of this method.

*­Higher quality images are required for Figure 1 (e.g., Figure 1 right).*

We have updated the images in Figure 1 to better represent methods outlined in the protocol as well as improved the image quality.

*­Full range UV­Vis­NIR absorbance spectra (e.g., 400 to 1400 nm range) would be desired to show not only the concentration of SWNTs but also how well SWNTs are dispersed.*

We have acquired new absorbance spectra and now include a full UV-Vis-NIR absorbance for both GT15-DNA SWNTs and RITC-PEG-RITC tubes (Figure 2).

*­Sensing results shown in Figure 3 are confusing.*

We have remade Figure 3 to more clearly show how dopamine affects fluorescence intensity of the (GT)15-PEG-SWNT sensor.

*­As the focus of the protocol is sensing, it would be better to show the results of sensing experiments than the results of bleaching experiments in Figure 4.*

We believe that our new Figure 3 clearly emphasizes the sensing of dopamine using GT15-DNA SWNT sensors. The objective of Figure 4 is to provide examples of single molecule measurements and demonstrate how this approach can also be used for characterization of polymer wrapped SWNTs, which are commonly used to determine why certain sensors work while others don’t. We have edited the introduction and discussion sections to outline these motivating factors more clearly.

*­One of the key molecules prepared in the protocol is RITC­PEG­RITC polymer. The results with RITC­PEG­RITC polymer are not shown.*

Results for RITC-PEG-RITC SWNTs are now included in Figure 1 and Figure 2.

*­It is not clear why the authors selected and prepared C26 and (GT)15­DNA SWNTs. How do they function differently?*

We present (GT)15-DNA as a sensor for dopamine. Figure 4 shows representative data for single molecule measurements of SWNTs coated in a different, unrelated DNA sequence (C26) using the same preparation methods as the (GT)15-DNA. This particular set of data is unrelated to the GT15-DNA sensors and is instead intended to demonstrate the ubiquity of this method to encapsulating SWNTs with any arbitrary DNA sequence. We have modified the results and discussion sections to make this more apparent to the reader.

*Minor Concerns:*

*­Line 58: In "fluorescence emission that is stable, biocompatible and sensitive," it is not clear what "fluorescence emission that is biocompatible" means.*

We have rewritten this sentence and resolved this ambiguity.

*­Line 59: It would be better to be more specific for what "coating" means.*

We have replaced the word “coating” with “non-covalently functionalized” and in the next sentence clarify that these molecules are adsorbed onto the surface of the SWNT.

*­Line 68: The definition of SWNTs, cylinders of graphene, is not clear.*

We have rewritten the first several sentences of the introduction to more clearly define SWNTs.

*­Line 69: It may be better to change "This includes" to "These include."*

This has been rewritten to improve the grammar.

*­Line 72: "owing to their structure" is not clear. This statement may not represent the current state of the field. For examples, the references cited (references 5 and 6) are published in 2000 and 2002.*

We now cover, in more detail, the general properties of SWNTs as well as include numerous additional references to provide a better background to the field. This now includes more references to recent literature.

*The use of "tubes" is not clear; it would be better to use a consistent terminology for SWNTs. It seems like that the authors use "tubes" for microcentrifuge tubes in the protocol.*

We have replaced mention of “tubes” with “SWNTs” for clarity. Additionally, we now specifically use the term “microcentrifuge tubes” in the protocol to eliminate potential confusion.

*­Line 73: The sentence is not clear, including the use of "potential."*

This sentence has been rewritten to clearly outline how the SWNT sensors function and their applications.

*­Line 85: The sentence starting with "perturbations" may not adequately describe the concept of corona phase molecular recognition.*

We have rewritten and expanded the introduction to more clearly describe the concept of corona phase molecular recognition.

*­Line 91: The sentence starting with "additionally" needs references.*

An appropriate reference has been added to this sentence that reviews the applications of SWNTs in biological sensing.

*­Lines 95 to 98: These statements are not clear or adequate.*

These sections pertaining to the above comments have been completely rewritten to improve content as well as clarity. This includes a better explanation of corona phase molecular recognition and addition of current references.

*­Page 3: What is the difference between ultrapure water and deionized water?*

We have replaced instances of “ultrapure” with “deionized” for consistency.

*­Line 184: The use of "tubes" can be confusing.*

We have replaced mention of “tubes” with “SWNTs” for clarity. Additionally, we now specifically use the term “microcentrifuge tubes” in the protocol to eliminate potential confusion.

*­The use of terms is not consistent (e.g., x g and cfg).*

To correct this inconsistency, all instances were replaced with “x g”.

*­Line 204: The use of "static" is not clear.*

We are referring to static electricity. The manuscript has been modified to make this more clear.

*­Line 224: What is CoPhMoRe?*

CoPhMoRe is the acronym for Corona Phase Molecular Recognition. The manuscript now more clearly defines this acronym in the introduction.

*Additional Comments to Authors:*

*N/A*