Dear Editor:

Thank you so much for your editing and we are grateful for the reviewers’ comments concerning our manuscript (sensors-690442). These comments are all valuable and very helpful for the revision and improvement of our manuscript, as well as our research. We have considered the comments carefully and rewritten the contents to improve the quality of the manuscript and address the reviewers’ questions.

We are herewith submitting our point-by-point response to the reviewers’ comments. We hope these changes and answers can meet the requirements for the publication of our manuscript on Sensors. The detail of the revisions are as follows:

To Reviewer #2:

**Question 1:** Important information regarding the method of FEM simulation like mesh size, boundary condition, excitation and polarization direction etc. should be mentioned in the manuscript. Proper validation of the simulation should be provided. Specifically, several spikes in the electric field intensity plot in figure S4 seems be due to problem in the simulation (possibly due to low mesh quality at the apex). A zoomed-in figure of the meshed geometry near the apex should be provided in the supporting.

**Answer:** The information regarding mesh has been added in the supplementary section (line 54) where simulation set up is explained, while the picture of meshed structure has been added in Figure S1 along with zoomed in figure of the apex. The information regarding boundary conditions and polarization direction have been tabulated in Table S2.

**Question 2:** In figure S4 the x-axis label – please use the symbol ‘µ’ and not the letter ‘u’.

**Answer:** The axis label for figure S4 has been corrected.

**Question 3:** Towards the end of the paper the author talks about the effect of tip diameter on the electric field intensity and temperature, but the result of the analysis is not shown.

**Answer:** The details of output at the apex with respect to changes in fiber diameter and tip radius have been removed as the information was not useful in the explanation of the effect and a source of confusion.

**Question 4:** The change in refractive index (RI) with temperature is very small and highly local (ranges within a few tens of micrometers). It is hard to believe that such minute change will give rise to a detectable shift in the LSPR peak.

**Answer:** LSPR is actually very sensitive to very local refractive index of the medium. So, in case
the local refractive index of the medium changes, it would lead to a shift in the LSPR peak.

**Question 5:** What is the resolution of the grating used in the spectrometer and distance between the tip and the objective?

**Answer:** The resolution of grating and the distance are 0.1 nm and approximately 2 cm respectively and we, have added them at line 127 and 128 correspondingly.

**Question 6:** Proper control experiments are missing. The authors should repeat the experiment with a fiber tip of the same dimension but without the gold coating and show that the shift is due to LSPR only.

**Answer:** The control experiment with IPA and its corresponding graph has been added as figure 5b in the manuscript.

**Question 7:** Figure 5 does not have the propanol data. Also, the label is wrongly marked as figure 1 instead of figure 5

**Answer:** IPA is short for Iso-Propyl Alcohol which is a type of propanol. The name has also been added in the manuscript in order to avoid the confusion.

**Question 8:** Authors mention that the rate of change of RI of water with respect to temperature is higher than the other organic molecules, but in figure 5 the peak shift in water is the least, which is contradictory since LSPR peak shift has a direct relationship with RI.

**Answer:** At line 186 of the manuscript, we say that “change of refractive index of water per unit temperature change is an order of magnitude smaller than the organic chemicals”. This explains the least shift in LSPR peak of water.

**Question 9:** A simulation graph corresponding to the experimental graph (LSPR peak shift vs intensity of excitation) in figure 5 should be provided

**Answer:** In the short term, we could not provide it. Our model of the fiber is large, that is why the simulations that we have shown in the manuscript are 2D-axisymetric. In order to provide a graph of LSPR according to the response given in figure 5a, we need a 3D model which would require very large computational power, which we cannot afford in the short term.

**Question 10:** Title mentions ‘sensor’ but no performance evaluation of a sensor is made in the manuscript. What are the detection limit and the linearity range of the gold tip? These are very important parameters to evaluate the quality of a sensing technique.

**Answer:** The title has been changed to “Photothermal Effect in Plasmonic Nanotip for LSPR Sensing”. The detection limit of LSPR sensors used in the literature has been added to the manuscript. But the detection limit of the nanotip we used is not mentioned because the focus of the manuscript is towards the fact that the nanotip is not a good sensing method for LSPR sensing.

**Question 11:** In figure 3a the scale bar is incomplete- mentioning only one point in the middle beats the purpose of a scale bar.

**Answer:** The figures have been improved as directed by the reviewer. And the problem with figure 3 specifically mentioned has been rectified.
Question 12: The paper is poorly written with silly mistakes in several places. To name a few, figure 3 is wrongly mentioned as figure 1, unnecessary capitalization of words in between a sentence, inconsistency in terminology – ND-filter/ND filter, inconsistency in unit – sometimes space between number and unit sometimes not - please follow a consistent convention. Language requires lot of improvement. Introduction requires improvement.

Answer: We have proofread the paper and tried to improve the language. We have tried to remove the unnecessary capitalizations and inconsistency of the terminology. The introduction section has been improved as well.


Answer: The literature you suggested has been added to the manuscript.

We hope the answers and revisions can meet the comments and thank you for your consideration.

Best regards,

Xiangwei Zhao