Original Manuscript ID: SNA-D-24-01745

Article Title: Effect of Size and Humidity Variations on Rhenium Disulfide-coated Fiber Optic Humidity Sensors: Experimental Analysis and Performance Evaluation.

Dear reviewer,

Thank you for reviewing our manuscript for publication consideration in International Journal of Nanoelectronics and Materials. We are uploading:

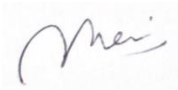
a) Our point-by-point response to the reviewer's comments (Please see the attachment).
b) An updated MS Word manuscript with Blue Font indicates changes (Please see the attachment).

This manuscript has been sent to an English professional editor to improve the quality and language of the manuscript. We want to thank you for your thoughtful comments and efforts toward improving our manuscript.

We confirm that this manuscript has not been published elsewhere and is not being considered by any other journal. All authors have approved the manuscript and agree with its publication in International Journal of Nanoelectronics and Materials. Please do not hesitate to contact us if you have any further inquiries.

Thank you

Best regards,



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RESPONSE TO REVIEWER #2

No	Reviewer's Comments	Response	Page
1	Introduction: The introduction is well-structured and provides a good overview of humidity sensing and the advantages of optical fiber sensors. The explanation of relative humidity is clear.	Thank you for the comment.	
2.	Methodology: 1. Ensure Figure 1 is correctly inserted and labelled. 2. The experimental setup figure (Figure 4) could benefit from labels and clearer layout for better interpretation.	Thank you for the comment. 1. Figure 1 has been added label for better understanding. 2. The experimental setup in Figure 4 has been revamped and enhanced labels to improve understanding.	*Page 2, Column 2, Figure 1* *Page 3, Column 1, Figure 4*
3.	Result and Discussion: 1. Specifically, re-evaluate the sensitivity values for the 4 µm tapered fiber in Table 1 and the corresponding text. If the coated 4 µm fiber indeed has lower sensitivity, explain why it deviates from the trend observed in 7 µm and 10 µm fibers, or confirm if there was a typo in the table. 2. Consider adding a brief discussion on the physical mechanism behind the observed power changes (increase or decrease) in relation to the ReS2 coating and humidity, beyond just wavelength shifts.	Thank you for the comment. 1. Table 1 has been revised and corrected based on the results obtained in Figure 9. 2. A brief discussion on the physical mechanism behind the observed power changes in relation to the ReS2 coating and humidity has been added in the manuscript. "Variations in output power with increasing humidity in the ReS_2 coated fiber result from two competing processes. Moisture adsorption increases the coating's refractive index,	*Page 5, Column 2, Table 1* *Page 6 Column 2*

		improving evanescent field coupling and raising power at higher relative humidity. At the same time, hydration increases absorption losses, causing a temporary drop in power around 50 % RH before power levels recover at higher humidity."	
4.	Conclusion: The conclusion reiterates key findings but should include comments on future work or broader implications of the findings in real-world applications.	Thank you for the comment. The author has included future work of the project in this section. "Future work can consider evaluating long term stability and repeatability under cyclic humidity and temperature variations will quantify calibration drift, hysteresis, and durability. These evaluations will demonstrate sensor reliability and guide design tweaks for practical, real-world deployment."	*Page 6, Conclusion*