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| Book Name: | **Plasmas Afterglows with N2 for Surface Treatments synthesis 2024** |
| Manuscript Number: | **Ms\_BPR\_3686.21** |
| Title of the Manuscript:  | **Effect of the HF Wave Frequency in the N-atom Production in N2 HF Plasmas. Application to CN Thin Films Deposition** |
| Type of the Article | **Book chapter** |

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| PART 1: Review Comments |
| Compulsory REVISION comments | Reviewer’s comment | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.** | **The manuscript holds significance as it can inspire further studies into frequency-specific plasma behavior. This study also demonstrates the relationship between plasma parameters (frequency, power, and pressure) and their impact on N atom density. Personally, I like the manuscript because of the investigating relationship between HF wave frequency, power, and N-atom density provides important insights into optimizing plasma processes.**  |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | **The title could more clearly link the two parts (N-atom production and CN thin films deposition) to emphasize the connection between them. Something like “Effect of HF Wave Frequency on N-Atom Production in N₂ HF Plasmas and Its Application in CN Thin Film Deposition”.** |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | **Addition of brief introduction to what the chapter is about would be beneficial rather than just mentioning key findings and technical details.** |  |
| **Are subsections and structure of the manuscript appropriate?** | **Subsections 21.3, 21.4, and 21.5 felt disconnected, leaving the overall flow of the chapter unclear. The discussion of the ABACUS method was not integrated further into the chapter. Similarly, it was not evident how the variations in N-atom density discussed in 21.4 influenced the production of CNx thin films in 21.5.** |  |
| **Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.** | **The results presented in the manuscript give a respectable impression about scientific accuracy and technical soundness. This work certainly establishes dependence of the frequency and power of the HF waves on N-atom density owing to such quantitative data as the saturation of [N] equal to 1.5 × 10¹⁵ cm for 2450 MHz and over 7 x 10¹⁴ cm for 13.56 MHz at constant conditions. Overall, these results are consistent with the behaviour of plasma systems, which demonstrates proper design of the experiment and good accuracy of measurements.** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | **The references cited in the manuscript are older, it is recommended to incorporate recent researches.** |  |
| Minor REVISION commentsIs the language/English quality of the article suitable for scholarly communications? | **Yes** |  |
| Optional/General comments | **Following edits that needs to be done in the manuscript:1- Fig 21.1: Few parts of labelling are truncated or overwritten****2- Proper notations need to be described if not described in previous chapters example in section 21.3: what is N (B,v’) where :B refers to a vibrational band or state of the nitrogen molecule. v' refers to the vibration level of the nitrogen molecule in that band.****3- Describe parameter <<<a>>> if not described in previously in any chapters (before equation 2 in section 21.3). Similarly, what is parameter “I” in equation 2****4- Fig. 21.2 : y-xis labelling missing &** **5- Fig. 21.4 – 21.7: Indistinguishable symbols can lead to confusion. Use distinctive shapes, incorporate colours, or increase symbol size** |  |

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| **PART 2:**  |
|  | **Reviewer’s comment** | **Author’s comment *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*** |
| **Are there ethical issues in this manuscript?**  | ***(If yes, Kindly please write down the ethical issues here in details)*** |  |

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| **Reviewer Details:** |
| **Name:** | **Hadiqa Khan** |
| **Department, University & Country** | **NED University of Engineering & Technology (NEDUET), Pakistan** |