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| Book Name: | **Plasmas Afterglows with N2 for Surface Treatments synthesis 2024** |
| Manuscript Number: | **Ms\_BPR\_3686.22** |
| Title of the Manuscript: | **N, H and C-atoms Density in Flowing Afterglows of Microwave R/N2-H2 and R/N2-CH4 Discharges with R=N2, He, Ar and Applications to TiO2 Surface Nitriding** |
| 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 explores an interesting and relevant topic with sound experimental techniques. However, several areas require improvement to enhance the clarity, impact, and presentation of the work. |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | The title of an article plays a crucial role in capturing attention and accurately reflecting the content. Based on the current title, *"N, H and C-atoms Density in Flowing Afterglows of Microwave R/N2-H2 and R/N2-CH4 Discharges with R=N2, He, Ar and Applications to TiO2 Surface Nitriding"*, |  |
| 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. | The abstract needs a stronger emphasis on the significance of the study. Clearly outline the key findings and their potential applications, particularly in TiO2 nitriding. |  |
| **Are subsections and structure of the manuscript appropriate?** | Yes |  |
| **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.** | This manuscript demonstrates scientific correctness through its well-structured experimental design and comprehensive analysis of atom densities in microwave afterglows. The methodology is clearly detailed, and the results are supported by precise measurements, equations, and spectroscopic techniques. The findings are relevant and contribute significantly to the field of TiO2 surface nitriding, showcasing practical applications in material science and industrial processing. Overall, the study is technically sound and provides valuable insights into plasma-based surface treatments. |  |
| **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 relevant to the study and provide a good foundation. However, updating the references with more recent studies would strengthen the manuscript further. Suggested topics for additional references include:   1. Advances in microwave plasma applications for material processing. 2. Latest studies on TiO2 surface nitriding methods. 3. Techniques for managing impurities in plasma systems. |  |
| Minor REVISION commentsIs the language/English quality of the article suitable for scholarly communications? | **Language and English Quality**:   * The language is generally clear and suitable for scholarly communication. However, minor grammatical corrections and improvements in phrasing are recommended to enhance readability. * Simplify overly technical sentences where possible to broaden accessibility. |  |
| Optional/General comments | **Figures and Tables**:   * Improve figure captions to ensure they are self-explanatory and provide sufficient context without relying on the main text. * Ensure consistent formatting of tables and figures, especially for units and labels.   **Practical Implications**:   * Expand the discussion on the practical implications of the findings, particularly for industrial applications of TiO2 nitriding. * Include more visual aids, such as charts or graphs, to present data trends and comparisons effectively. * In the conclusion, briefly emphasize how this study paves the way for further research in surface treatments or plasma applications. |  |

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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: | **Siti Hasanah Binti Osman** |
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