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| Book Name: | **Plasmas Afterglows with N2 for Surface Treatments synthesis 2024** |
| Manuscript Number: | **Ms\_BPR\_** **3686.4** |
| Title of the Manuscript: | **Time Varying Plasmas and Afterglows for Surface Treatments** |
| 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.** | **This manuscript presents a comprehensive study of time-varying plasmas and afterglows in different gas environments (Ar, N2, He) using various discharge techniques (DC, RF, DBD, magnetron). The research is significant because it provides detailed insights into plasma physics, surface treatment technologies, and the mechanisms of active species generation in different plasma conditions. The work bridges fundamental plasma science with practical applications in surface engineering, making it valuable for researchers in plasma physics, materials science, and surface treatment technologies.** |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **The title is suitable and reflects the core content of the manuscript. If a shorter or more focused alternative is desired, consider: *"Time-Resolved Studies of Plasmas and Afterglows for Material Surface Treatments."*** |  |
| 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 is comprehensive and effectively summarizes the research by addressing the types of discharge structures studied, the gas environments and pressure conditions, key findings on long- and short-time afterglows, and specific observations under different plasma conditions. However, it could be improved by placing greater emphasis on the applications and key findings. Highlighting specific technological implications, such as the industrial significance of TiO₂ coatings and the diagnostic relevance of NOγ band emissions, would enhance its impact. Additionally, rephrasing for conciseness, particularly in the discussion of afterglow characteristics, would improve clarity and focus. These refinements would help better communicate the study's contributions and practical relevance.** |  |
| **Are subsections and structure of the manuscript appropriate?** | **The manuscript is well-structured with clear subsections: 4.1 - Introduction 4.2 - Pulsed DC Plasmas in N2 and N2-H2 4.3 - Pulsed RF Plasmas in Ar and Ar-N2 4.4 - Pulsed DBD Glow and Townsend Discharges in He and N2 4.5 - Pulsed Magnetron Discharges 4.6 - Conclusion**  **This organization provides a logical flow of information and allows readers to understand the progression of research and findings.** |  |
| **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 manuscript demonstrates robust scientific methodology:**   * **Detailed experimental setups are described** * **Optical spectroscopy and absorption techniques are used** * **Clear explanations of plasma reactions and mechanisms** * **Quantitative data and graphical representations support the findings** * **Systematic exploration of different plasma conditions and their effects** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.**  **-** | **The references appear sufficient and are from credible scientific journals. They span from 1984 to 2008, providing a good historical context. However, it might be beneficial to include some more recent references (post-2010) to demonstrate the ongoing relevance of the research.**  **Suggested Additional References:**   * **Recent review papers on plasma surface treatments** * **Newer studies on magnetron sputtering and HiPIMS technologies** * **Advanced spectroscopic techniques in plasma diagnostics** |  |
| Minor REVISION commentsIs the language/English quality of the article suitable for scholarly communications? | The manuscript is written in clear, technical English suitable for scholarly communication. The scientific terminology is precise, and the explanations are detailed yet comprehensible. but contains some typographical and grammatical errors. For example:   * Correct "mentionned" to "mentioned" and "than" to "then" where applicable. * Ensure uniformity in using symbols (e.g., ensure proper subscript and superscript formatting for chemical formulas). |  |
| Optional/General comments | The manuscript provides valuable insights into time-varying plasmas and afterglows for surface treatments, with robust technical content and practical relevance. Improving figure clarity, addressing minor language errors, and adding recent advancements or applications would enhance its impact.  **This manuscript deserves recognition for its scientific depth and technical contributions. It requires only minor revisions to polish language and improve figure clarity.** |  |

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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: | **Abdelmounaim Laassouli** |
| Department, University & Country | **Sultan Moulay Slimane University, Morocco** |