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| Book Name: | **Plasmas Afterglows with N2 for Surface Treatments synthesis 2024** |
| Manuscript Number: | **Ms\_BPR\_3686.26** |
| Title of the Manuscript: | **The Iron Nitriding in N2 and N2-H2 Afterglows** |
| Type of the Article | **Complete 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 title is appropriate to the content of the work. The pictures are a bit old and I don't see the citations (sources) from where these microstructures were taken. I would have preferred to see the source of inspiration in square brackets.**  **The chosen topic is important, especially in the field of materials science and engineering. The nitriding treatment has been used many times to increase the wear resistance (especially of gears made from alloyed steels for nitriding). At the same time, the nitrided layer increases the corrosion resistance of the steel parts.** |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **Yes, it is.** |  |
| 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. | **In the abstract, a few more lines could be written about the chosen topic. This Abstract is too short.** |  |
| **Are subsections and structure of the manuscript appropriate?** | **Yes, the structure of the manuscript is appropriate.** |  |
| **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 nitriding treatment has been used many times in industry to increase the wear resistance (especially of gears made from alloyed steels for nitriding). At the same time, the nitrided layer increases the corrosion resistance of the steel parts.**  **In this work, the Iron Nitriding in N2 and N2-H2 Afterglows have been considered.**  **Nitriding is based on the use of nitrogen. This is a diffusion treatment, during which nitrogen is produced, deposited on the surface of the parts and then diffused inside them. Nitriding aims to generate atomic nitrogen (N), which will carry out the diffusion, resulting in the superficial layer, which is also observed in the microstructures.** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | **The bibliography could be a little enriched.** |  |
| Minor REVISION commentsIs the language/English quality of the article suitable for scholarly communications? | **The work has some grammatical mistakes, which I explained in red in the text (for example, replacing the word "are" with "is" is necessary)** |  |
| Optional/General comments | **There are portions of the text where additional spaces have been inserted between characters (marked with blue colour).** |  |

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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: | **Papadatu Carmen-Penelopi** |
| Department, University & Country | **“Dunarea de Jos” University, Romania** |