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| Book Name: | **Plasmas Afterglows with N2 for Surface Treatments synthesis 2024** |
| Manuscript Number: | **Ms\_BPR\_3686.25** |
| Title of the Manuscript:  | **Treatment of Textiles in Plasma Afterglow** |
| 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.** |  |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** |  |  |
| 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. |  |  |
| **Are subsections and structure of the manuscript 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.** |  |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** |  |  |
| Minor REVISION commentsIs the language/English quality of the article suitable for scholarly communications? |  |  |
| Optional/General comments | Review comments to the chapter: Treatment of Textiles in Plasma Afterglow Abstract: The abstract of the chapter is always talk about the content in chapter and importance of it. However, in this abstract results are given and it talks about the experimental objective of the work which normally given in research paper. Chapter of any book should give the complete review of the work reported in the area and critically comment about the observations. Additionally, book chapter should add some new information which is not reported in any of the published work. Further, the book chapter may provide the future possibilities in the area of work and challenges the same is not address in this chapter. This chapter merely present the results of the work done which out any scientific justification of the observed results. Which should not be the case for any book chapter. Below are my detailed comments1. Introduction: no introduction of the work reported in this chapter is given at all. Only objectives of the work are given in first four lines which the repetition of the abstract.
2. In introduction section second para is about the observed results. This should not come in the introduction section
3. Section TRANSMISSION OF N-ATOMS…. Schematic of the equipment used for afterglow treatment may be given and discuss. How the density of the N atom is measured is not clear. It is shown in the figure 27.2 but not discuss. It should be discus in details.
4. FTIR for untreated PP- oxidizing peaks is present at 1,670 what is the reason for it?
5. How the second wetting cycles was performed on the wool fabric surface is not clear.
6. How the change in Carbon content is related to change in contact angle is also not explained in scientific manner.
7. Sentence “Keratin hair fibers were used as a model for the wool fiber” is not clear. Wool fiber is also a keratin fiber. Kindly explain the same in details.
8. In figure 27.7, what is B, C and D?
9. Textile colour change study- what is mean by “conditioning materials for plasma sterilization processes”? use of plasma treatment for sterilization process is well known and it does not require any conditioning materials according to reported literature. The objects need to sterilized are directly placed in the plasma chamber and plasma parameters such as gas flow, time, pressure etc. need to be optimized. It is not clear that what is “conditioning material for plasma sterilization processes”? why one should use it? How it works? What are the benefits of using it?
10. The reason behind the change in colour of the textile material w.r.t. different position is not explained in details. Why the samples kept in front of jet shows the more colour change than that of the samples at backward? what is reaction or chemical changes that are responsible for colour change? What is the relation between the colour change and sterilization?
11. SHRINK RESISTANCE—how the shrinkage is measured for non-treated and after exposure to afterglow samples? What is 5A cycles in figure 27.9? how the washing cycles are performed?

It is surprising to see the figure 27.9 as the shrinkage for untreated wool is increasing from 1st cycle to 2nd cycle and then to 3rd cycle. This need to be elaborated in details. 1. According to figure 27.10, direct N2 plasma treatment gives the better results for the same shrinkage reduction afterglow plasma required 3 time more exposure. How do you compare this. What is the additional benefit of use of afterglow plasma as compared to direct plasma?
2. Why the whiteness was measured is not clear. Why the atom intensity is more for O2 than N2 and N2-O2?
3. Table 27.4 need restructuring. L, a, b values should also be given along with whiteness index.
4. Figure 27.11, it is well known fact that O2 gas is more effective to introduce hydrophilic properties to the material. This section should be elaborated with the proper justification for the observed results.
5. Figure 27.13 a need revision.
6. Figure 27.13 vertical axis atomic ratio (%), either it is % or ratio. It can not be both. If it is atomic ratio. Kindly mention the ratio of which atoms?
7. Changes in the C1s spectra of the XPS analysis with reference untreated and afterglow plasma treated samples should be given.
8. Conclusion should give the comprehensive out put of the overall chapter, which is completely mission here.
9. References- reference of only one author is cited and those 5 references are also very old. New references from last few years should be cited. It is suggested that references cited should be from multiple databases.

**Overall comments about the chapter**The manuscript is written like a research paper and not as a chapter. The chapter is not at all acceptable in the present form for publication as a chapter or research paper. It requires major revision as mentioned above. Further, it is not clear what the authors want to convey from the reported work. For an example, figure 27.1 gives the expression that scissors to be sterilize keeping them inside the PP bag. Which is not true. Good amount of reported work talks about the sterilization but no analytical or experimental methods are used to measure the sterilization efficiency. Like this there are many points. In figure 27.2 it is not clear how the porous membrane gets expose to afterglow plasma. Only figure 27.10 shows the comparison of the direct N2 plasma treatment and afterglow plasma. What about the contact angle, hydrophilicity and sterilization?  |  |

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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: | **Shital Palaskar** |
| Department, University & Country | **Bombay Textile Research Association, India** |