Prof. Dr. Rada Petrović

Editor

Dear Prof. Dr. Petrović

Thank you very much for your letter concerning our paper entitled: "A study of the barrier properties of polyethylene coated with nanocellulose/magnetite composite film". We appreciate the opportunity to revise our work for consideration of publications in Journal of the Serbian Chemical Society. We have carefully taken the comments of reviewers into consideration in preparing our revision. The following summarizes our detailed reply to them.

**Reviewer A:**

Issue 1: *Line 24: The explanation of improvement of the barrier properties based on "microvoids" is mentioned only in the abstract. If "microvoids" are not considered anywhere else in the paper and even not mentioned in the "Conclusions", they should not be mentioned in abstract as well. The end of the "Abstract" (and "Izvod") should be re-written, based on explanations given in the chapter "Results and discussion".*

Discussion 1:Thank you, we excluded the term "microvoids" from the Abstract section. Also, we have re-written the end of the "Abstract" (and "Izvod") sections according to Reviewer suggestion.

Issue 2: *Line 90: Dots in formulas should be of the same size.*

Discussion 2: This is corrected in the revised manuscript.

Issue 3: *Line 110: Pure water exposed to air shows pH less than 7. Should be re-checked.*

Discussion 3: We acknowledge Reviewers observation. Indeed, pH of pure water should be 5. This is corrected in the revised manuscript.

Issue 4*: Line 116: "samle" should be changed to "sample".*

Discussion 4: Done.

Issue 5: *Line 117: "mL" should be changed to "ml".*

Discussion 5: Done.

Issue 6: *Line 119: "mL" should be changed to "ml".*

Discussion 6: Done.

Issue 7: *Line 122: "tthoroughly" should be changed to "thoroughly"*

Discussion 7: Done.

Issue 8: *Line 123: "dicloromethane" should be changed to "dichloromethane".*

Discussion 8: Done.

Issue 9: *Line 131: "mL" should be changed to "ml".*

Discussion 9: Done.

Issue 10: *Line 144: "mL" should be changed to "ml".*

Discussion 10: Done.

Issue 11*: Lines 151-153: The sentence: "Immediately after used for production of thin film at unmodified PE surface by layering with anilox roller with 10 μm indentation (Figure 2)." should be re-written. It does not make any sence in this way.*

Discussion 11: The sentence is now re-written: PCL based composite dispersion was immediately used for production of thin film at unmodified PE surface by layering with anilox roller with 10 μm indentation (Figure 2).

Issue 12: *Line 154: "Prepare" should be changed to "Prepared".*

Discussion 12: Done.

Issue 13: *Line 156: Table is not quite understandable. BM0 and BM1 should be included in the table, not given as the footnotes. Each group of samples should be clearly divided from another group.*

Discussion 13: BM0 and BM1 are included in the table in the revised version of the manuscript.

Issue 14: *Line 186: The second "of" should be deleted.*

Discussion 14: Done.

Issue 15: *Line 187: "...into two parts of the film sample. On one side of the film, in the chamber, is pure helium,..." should be changed to "...into two parts by the film sample. On one side of the film, there is a pure helium in the chamber,..."*

Discussion 15: Thank you we corrected the sentences according to Reviewer suggestion.

Issue 16: *Line 188: "...of the mixture..." should be changed to "...of the film there is a mixture...".*

Discussion 16: We corrected the sentence according to Reviewer suggestion.

Issue 17: *Lines 181-196: The procedure according to DIN 53380 should be explained more clearly.*

Discussion 17: DIN 53380 standard is universal testing method applicable to nearly all gases for the determination of gas transmission rate through plastic films or other materials depending on temperature and testing gas. This explanation is inserted in the main body of the revised manuscript.

Issue 18: *Line 207: "produce" should be changed to "products".*

Discussion 18: Done.

Issue 19: *Line 248: "f" should be changed to "of".*

Discussion 19: Done.

Issue 20: *Line 278: "signal" should be changed to "the signal".*

Discussion 20: Done.

Issue 21: *Lines 296-297: The complete sentence: "It can be observed the similar trend in thermal behavior of NC and NCMA samples." should be rewritten as: "The similar trend in thermal behavior of NC and NCMA samples can be observed."*

Discussion 21: We corrected the sentence according to Reviewer suggestion.

Issue 22: *Line 297: "In the both cases" should be changed to "In both cases".*

Discussion 22: Done.

Issue 23: *Line 350: "our goal" should be changed to "the goal of this work".*

Discussion 23: Done.

Issue 24: Lines 356-359: *A sentence: "Despite high barrier properties of nanocellulose due to its higher degree of crystallinity, it even exhibits oxygen barrier properties much superior to that of cellophane, very little research can be found in literature concerning investigation of barrier properties of nanocellulose and NC based nanocomposites." should be re-written. Here is a suggestion: "Despite of the high barrier properties of nanocellulose due to its higher degree of crystallinity, an the fact that nanocelluloe exhibits oxygen barrier properties even much superior to that of cellophane, very little research can be found in literature concerning investigation of barrier properties of nanocellulose and NC based nanocomposites."*

Discussion 24: The sentence is corrected according to Reviewer suggestion.

Issue 25: *Line 360: It should be clearly stated on the first occurence of abbreviation MFC, what does it mean. On the first occurence, the abbreviation should be given in brackets.*

Discussion 25: The abbreviation MFC means microfibrillated cellulose (MFC), this is corrected in the body of revised manuscript, acaccordingly.

Issue 26: *Line 427-429: Improvement of barrier properties by using described composite films is noticable and measurable, as it is shown in tables III and IV, but it is still not significant. Please rephrase this constataion.*

Discussion 26: The sentence is corrected according to Reviewer suggestion.

Issue 27: *Line 452: "chemical" should be changed to "chemically"*

Discussion 27: Done.

We appreciate Reviewer for taking the time to offer us your comments and insights related to the paper.

**Reviewer B:**

*In this manuscript, the authors investigated structural, morphological, thermal and barrier properties of LDPL coated with composite layer based on nanonocellulose/magnetite. The authors conducted extensive structural characterization, the paper is well written and the topic is an interesting one. The growing interest for use of nanocellulose as reinforcing filler resulted in a production of novel nanocomposites with a broad range of application. Another type of nanocomposites, which implies the use of metal oxides in different polymers, has also been intensively studied. However, the references concerning the use of metal oxides inside nanocomposites have been completely neglected. Authors failed to mention the significance of metal oxides fillers in different polymers, although these compounds are essential for their study. The Introduction section should contain the relevant references related to this subject.*

*I recommend publication with minor revision.*

Issue 1. *In Introduction the authors should more mention the significance of metal oxides fillers in different polymers. Also, the Introduction section should contain the relevant references related to this subject.*

Disscusion 1: We acknowledge Reviewer valuable comments and suggestions. The references related to this issue (metal oxides fillers in different polymers) are included into Introduction section of the revised manuscript.

Sincerely Yours,

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