BUKTI KORESPONDENSI ARTIKEL PADA JURNAL INTERNASIONAL

PENGUSUL

Radenrara Dewi Artanti Putri, S.T., M.T / NIDN 0019118701

UNIVERSITAS NEGERI SEMARANG

Yth Penilai

Pada Usulan PAK

Bersama dengan surat ini, saya bermaksud menyertakan bukti-bukti korespondensi proses artikel pada Jurnal Internasional dengan judul "Enhancing antifouling characteristics and performance against protein macromolecule foulant on PVDF membrane ultrafiltration with eco-friendly Arabic gum additive" yang dimuat pada Journal of Macromolecular Science, Part A Pure and Applied Chemistry, Taylor & Francis Online, halaman 1-15, pada 31 Maret 2023. ISSN:1520-5738.

Adapun susunan kronologi bukti korespondensi terdiri dari beberapa poin, pada tabel di bawah ini :

No	Tanggal	Aktivitas
1	27 November 2022	Pembuatan akun Taylor & Francis
2	4 Januari 2023	Submit manuskrip dan mendapatkan ID paper pada Journal of Macromolecular Science, Part APure and Applied Chemistry
3	27 Januari 2023	Mendapat balasan dari editor dan reviewer poin-poin yang harus direvisi
4	27 Februari 2023	Mengirim revisi paper
5	1 Maret 2023	Mendapat balasan editor bahwa manuskrip revisi telah diterima
6	4 Maret 2023	Mendapat balasan editor bahwa paper diterima
7	8 Maret 2023	Mendapat email ucapan selamat datang ke Taylor & Francis tentang submisi paper yang diterima
8	27 Maret 2023	Mendapat email untuk melengkapi data tentang copyright dan author agreement
9	27 Maret 2023	Konfirmasi untuk proof correction
10	31 Maret 2023	Mendapat email ucapan selamat bahwa paper sudah published

Demikian, agar dapat menjadi periksa.

Terimakasih

Semarang, 20 Agustus 2024

Hormat saya,

Radenrara Dewi Artanti Putri, S.T., M.T.

KRONOLOGI KORESPONDENSI PUBLIKASI ARTIKEL PADA JURNAL INTERNASIONAL BEREPUTASI DAN BERFAKTOR DAMPAK

Judul	: Enhancing antifouling characteristics and performance against protein macromolecule foulant on PVDF membrane ultrafiltration with eco-friendly Arabic gum additive
Jurnal	: Journal of Macromolecular Science, Part A : Pure and Applied Chemistry
ID artikel	: LMSA 2189440
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Penulis	: Radenrara Dewi Artanti Putri, Herlambang Abriyanto, Ria Desiriani, Abdullah Malik Islam Filardli, Zuhriyan Ash Shiddieqy Bahlawan, Maharani Kusumaningrum, Gita Putri Prastiwi, Rica Raihana, Desy Hikmatul Siami & Randi Aswar

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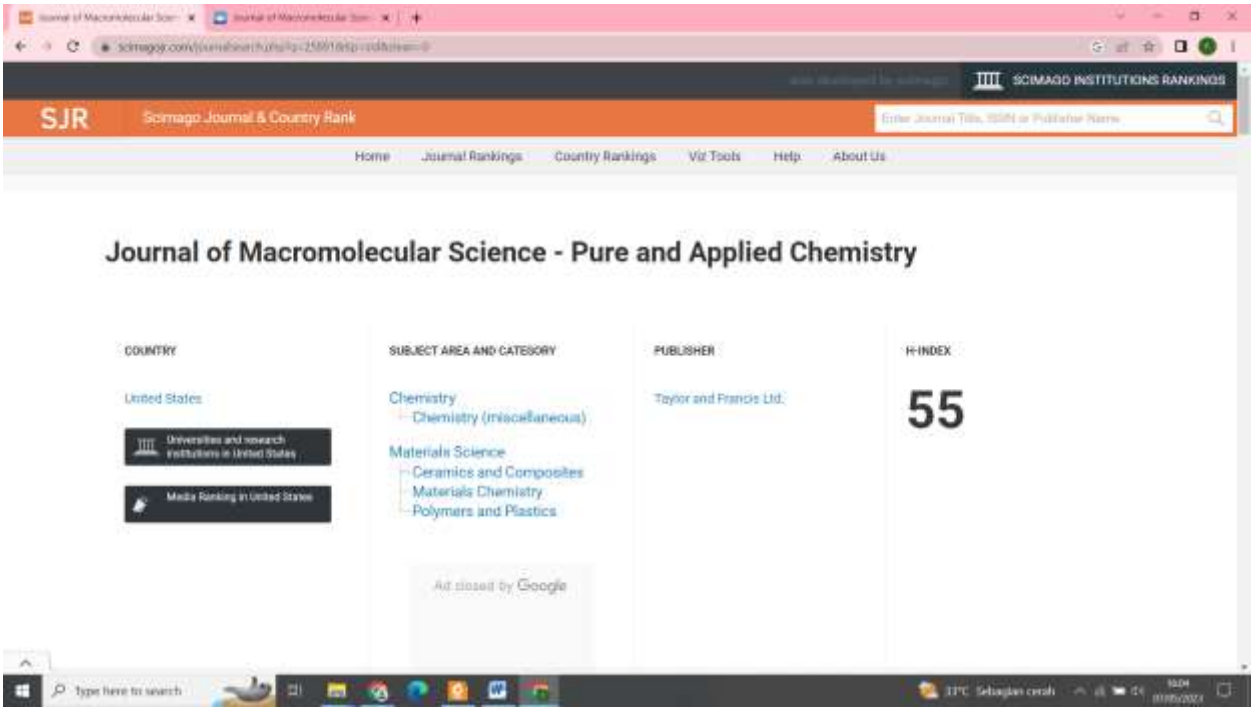

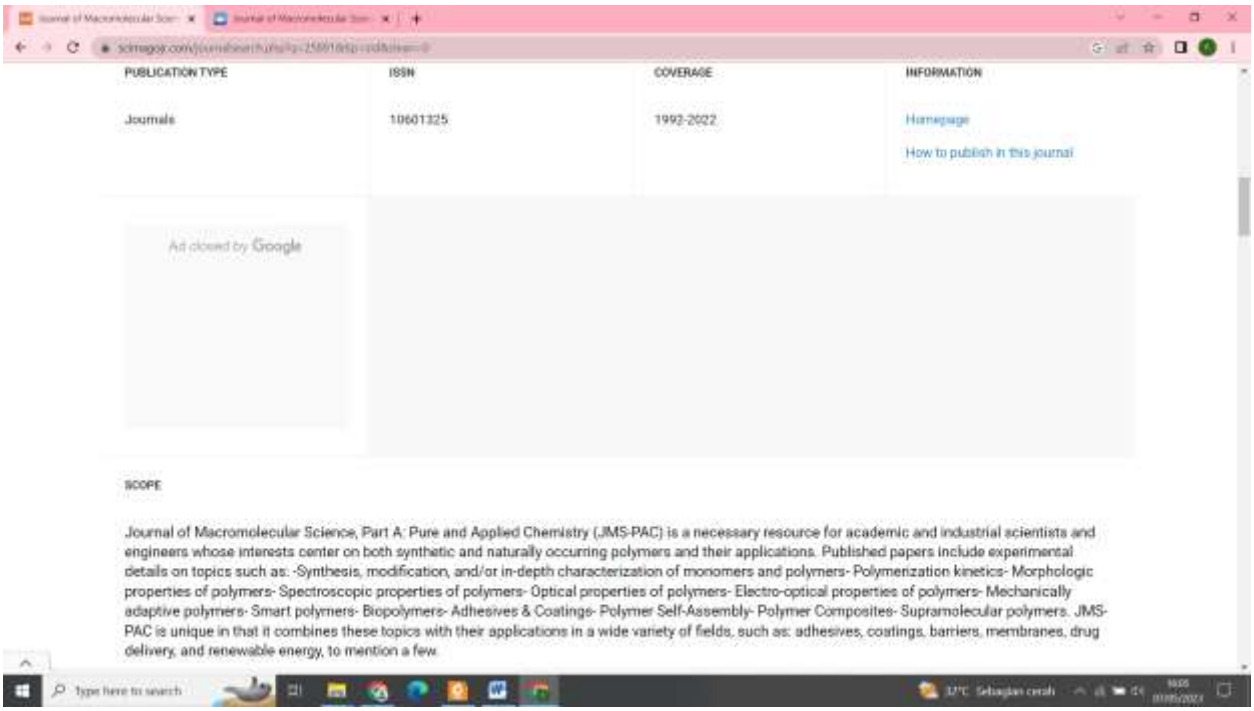

PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION
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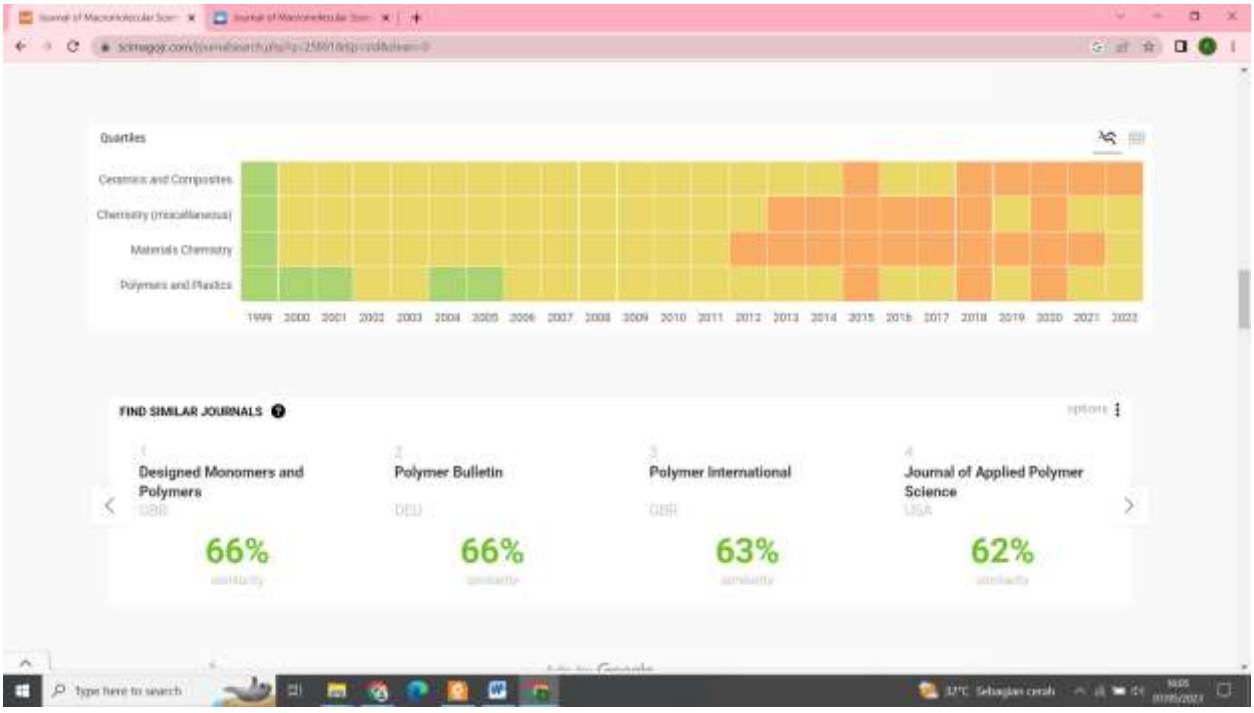
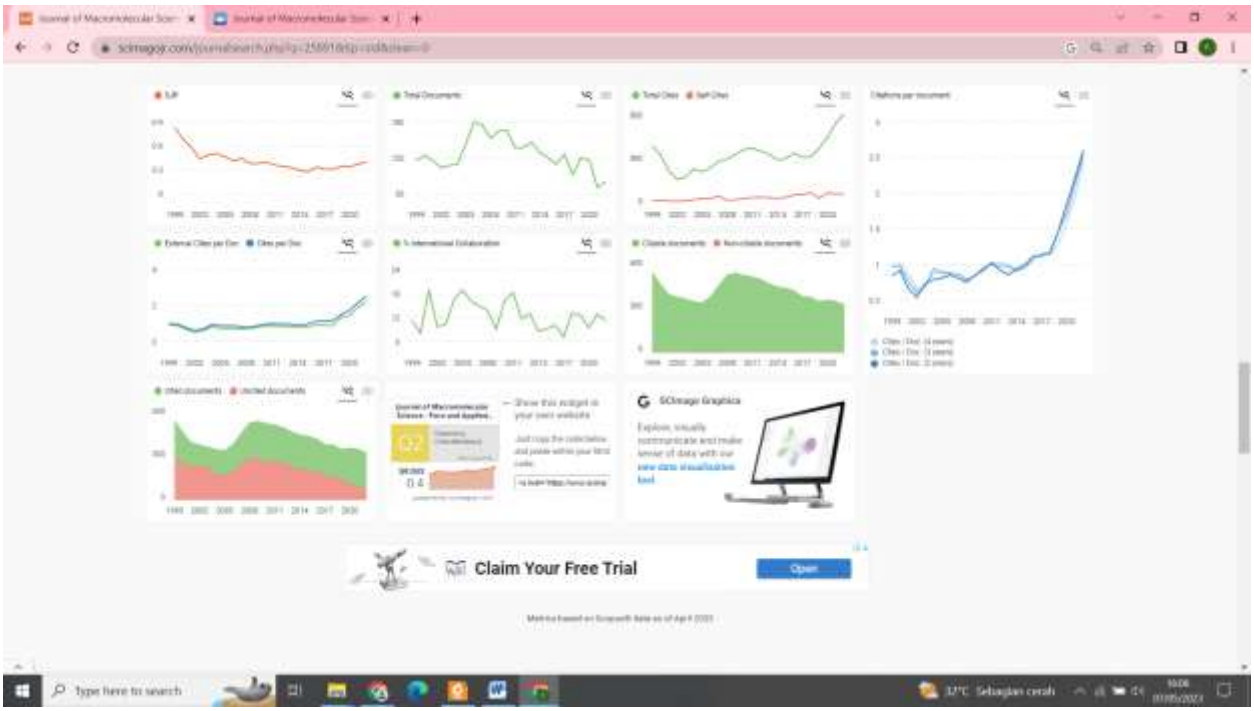
SCOPE

Journal of Macromolecular Science, Part A: Pure and Applied Chemistry (JMS-PAC) is a necessary resource for academic and industrial scientists and engineers whose interests center on both synthetic and naturally occurring polymers and their applications. Published papers include experimental details on topics such as: -Synthesis, modification, and/or in-depth characterization of monomers and polymers- Polymerization kinetics- Morphologic properties of polymers- Spectroscopic properties of polymers- Optical properties of polymers- Electro-optical properties of polymers- Mechanically adaptive polymers- Smart polymers- Biopolymers- Adhesives & Coatings- Polymer Self-Assembly- Polymer Composites- Supramolecular polymers. JMS-PAC is unique in that it combines these topics with their applications in a wide variety of fields, such as: adhesives, coatings, barriers, membranes, drug delivery, and renewable energy, to mention a few.

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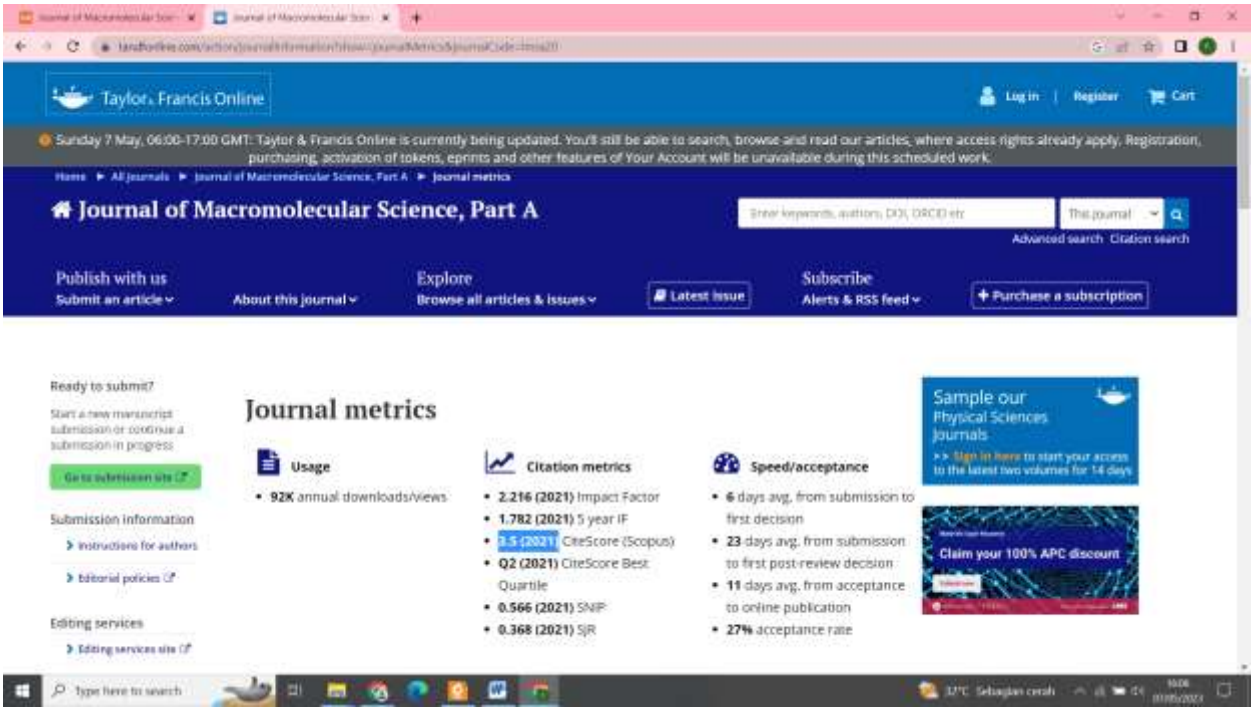
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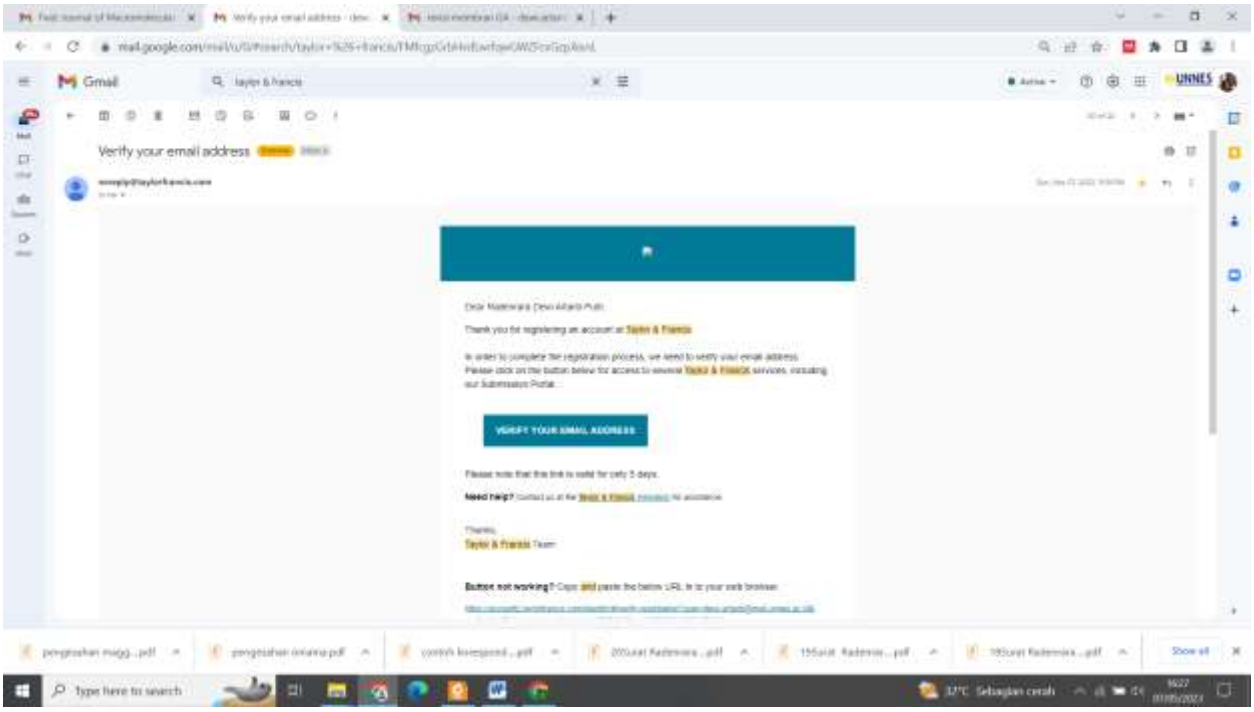

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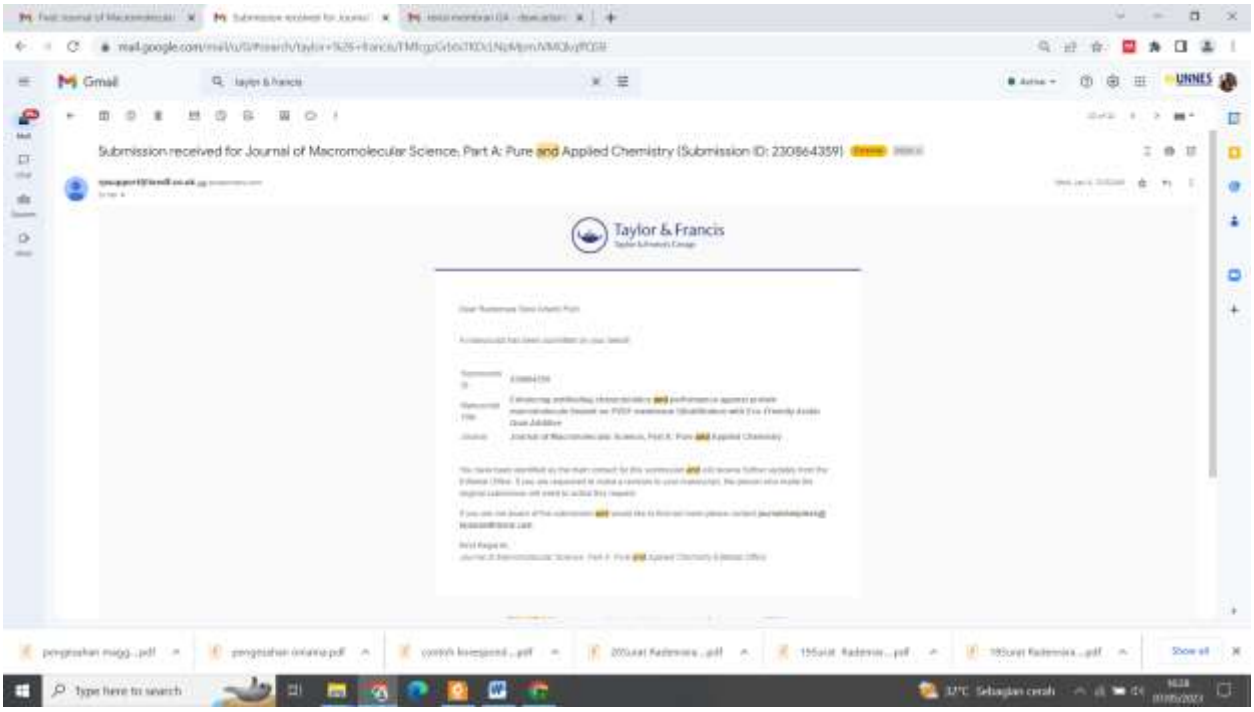

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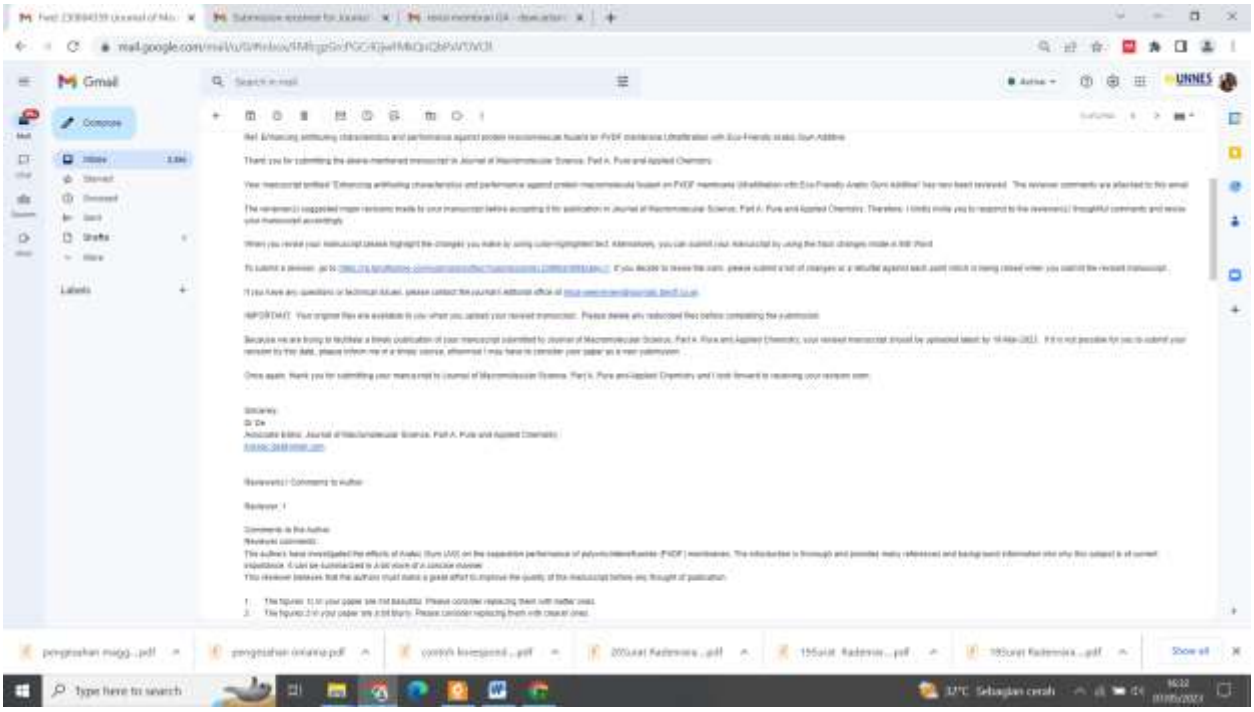

Isi dari email :

27-Jan-2023

Dear Dr Radenrara Dewi:

Ref: Enhancing antifouling characteristics and performance against protein macromolecule foulant on PVDF membrane Ultrafiltration with Eco-Friendly Arabic Gum Additive

Thank you for submitting the above-mentioned manuscript to Journal of Macromolecular Science, Part A: Pure and Applied Chemistry.

Your manuscript entitled "Enhancing antifouling characteristics and performance against protein macromolecule foulant on PVDF membrane Ultrafiltration with Eco-Friendly Arabic Gum Additive" has now been reviewed. The reviewer comments are attached to this email.

The reviewer(s) suggested major revisions made to your manuscript before accepting it for publication in Journal of Macromolecular Science, Part A: Pure and Applied Chemistry. Therefore, I kindly invite you to respond to the reviewer(s)' thoughtful comments and revise your manuscript accordingly.

When you revise your manuscript please highlight the changes you make by using color-highlighted text. Alternatively, you can submit your manuscript by using the track

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Once again, thank you for submitting your manuscript to Journal of Macromolecular Science, Part A: Pure and Applied Chemistry and I look forward to receiving your revision soon.

Sincerely,
Dr De
Associate Editor, Journal of Macromolecular Science, Part A: Pure and Applied Chemistry
jmspac.de@gmail.com

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author
Reviewer comments:
The authors have investigated the effects of Arabic Gum (AG) on the separation performance of polyvinylidenefluoride (PVDF) membranes. The introduction is thorough and provides many references and background information into why this subject is of current importance. It can be summarized in a bit more of a concise manner.
This reviewer believes that the authors must make a great effort to improve the quality of the manuscript before any thought of publication.

1. The figures 1c in your paper are not beautiful. Please consider replacing them with better ones.

2. The figures 2 in your paper are a bit blurry. Please consider replacing them with clearer ones.
3. The dosage of PVDF in 2.2.1 is directly 13%. Please tell me the reason. “cleaned with a tissue” is not scientifically rigorous.
4. Page 12 line 39 “Thus, the PVDF/AG-1.5 membrane has good intermixed ability and strong chemical interaction.” The XRD figure may not support this conclusion by itself.
5. Please explain in detail why you use Arabic gum, tannic acid also has a lot of hydroxyl, which is cheaper than Arabic gum, and it is more environmentally friendly.
6. The English grammar and word choice needs to be greatly improved. The manuscript should have been proofread beforehand.
7. Significant digits should be used throughout for experimental data. Some data no error estimate has been given.
8. How do your results compare with prior similar literature? For example?
9. The paper is not written in a format that meets the journal's submission requirements, such as the reference format.

Reviewer: 2

Comments to the Author
In this work, the authors have investigated the effect of adding an eco-friendly additive Arabica Gum (AG) into PVDF membranes to boost its antifouling performance when applied as ultrafiltration membranes in water treatment applications. While the research is not a significant step-forward in the field of membrane science (as scientists have already demonstrated the performance improvement due to incorporation of AG in other membrane chemistries like polysulfone), I believe a case can be made where the current work will be of interest to the audience of J. Macromol. Sci. Part A. However, there are several concerns that must be addressed before it can be published.

After careful reading, I would like to offer my comments as follows.

1. In Section 3.1, I am curious about the buckled morphologies of the AG microparticles. Are the cavities inherently present or a result of vacuum drying during SEM imaging? Is there an agreement between the total microparticle size measured by SEM and by PSA? Unless the cavities are of significant importance, the authors should report the total microparticle size from SEM instead of the cavity size.

Additionally, the authors make a statement in Section 3.1 – “The obtained result of FTIR data was consistent with SEM-EDX, PSA, and XRD observation” – which does not make sense. Can the authors elaborate on how FTIR data represents consistency with the data from SEM-EDX, PSA, and XRD?

2. In Section 3.2, I have trouble accepting the claim made by the authors that “increase in membrane pure water flux in obviously due to increase in the porosity of PVDF/AG membranes”. There is lack of confidence as the data is not supported by statistics. In Figure 2a, the error bars for % porosity data points are large and have not

been treated statistically to understand if one system is significantly different than the other. The authors are advised to perform statistical analyses involving multiple pairwise comparison of means (like Tukey HSD Test for equal variances) and then rely on their conclusion. The trend is unclear otherwise. Moreover, such statistical analyses should be performed for all other comparison studies in Figure 2.

To support the plot in Figure 2b, the authors should consider performing complementary experimental measurements like BET adsorption to calculate pore size.

3. Similar to point 2, in Section 3.3 (Membrane Hydrophilicity), statistical analysis should be performed on the Figure 3a plot. Again, unless a confidence is developed on the % porosity results, the claim that “outcome result is agreed by the data of porosity” for hydrophilicity section is dubious.

Additionally, how did the authors perform the dynamic contact angle measurements? They are expected to provide the details in the Methods section.

4. In Section 3.3 (Mechanical Studies), Figure 4 is lacking error bars and appropriate statistical analyses. This is crucial to understand if there are variations (if any) and whether one system is significantly different than the other. Without statistics, it is difficult to conclude.

Moreover, in the same section, the authors abruptly bring up the concept of how amphiphilic portions of AG interacts with hydrophobic bonds of PVDF to strengthen the composite structure. What amphiphilic portions of AG are the authors referring to? How does it bond with PVDF? It would be helpful if the authors can briefly describe and expound on this concept for reader’s convenience with appropriate references.

5. In Section 3.5 (XRD Result), I am having a hard time trying to interpret from Figure 6 XRD plot if the sharpness of the crystalline peak at 20.60° is decreasing. Rather, it seems to have increased in intensity from PVDF/AG-1 to PVDF/AG-1.5. Can the authors clarify this and make it distinctly clear by performing some quantitative analyses of peak widths and peak heights?

6. In Section 3.7 (Antifouling Performance Test), the authors are requested to perform statistical analyses to compare means between different treatment groups in Figure 8a and Figure 8b. Also, the authors are required to define the terms fouling resistance (Figure 8e) and fouling ratio (Figure 8f). For the uninitiated audience, higher fouling resistance would mean lesser chances of undergoing fouling. If that is what it literally means, then shouldn’t membranes with higher fouling resistance be desirable? We see an opposite trend for the AG-doped PVDF membranes with respect to fouling resistance (assuming the definition is as per above). On the other hand, fouling ratio trend makes sense as lower fouling ratio would mean higher fouling resistance. The authors themselves make a statement – “In principle, the enhancement of hydrophilicity on membrane surface could increase the wettability and irreversible fouling resistance [47]”.

The authors are expected to clarify and address this confusion and provide adequate details in the main body of the manuscript text.

7. Can the authors comment on the efficiency of these AG-doped PVDF membranes from the perspective of re-use and recycle? How many times can a modified-PVDF membrane be reused before it loses the antifouling performance? Can the authors provide data to support their argument?

Minor Comments:

1. Reference #18 is not relevant to the text for which it is used as a citation. The authors are suggested to find an appropriate replacement.

2. In Table 1, please provide the units for the values in the columns PVDF and AG. It is not clear if the total batch size for each system size was 100 g. Can the authors clarify this?

3. In the Section 2.3.1, wouldn't it help to keep the units of membrane thickness (δ) the same? In one case it is given in cm, but in the other it is given as m. Please try to keep the units consistent to avoid confusion.

4. In Section 3.1, please provide the full form of PSA.

5. In some cases, like Figure 1 and Figure 8, the axes of the plots are overlapping with the regions of their neighboring plots. This could result in comprehension issues. Please ensure that the figure panels/plots are spaced out adequately to make graph reading easy.

6. In Section 3.2, please provide the full form of NIPS.

7. In Section 3.3, please check that the static contact angle for PVDF/AG-1.0 system is the same in the text and the Figure 3 plot.

8. In Section 3.4 (FTIR Result), please highlight the peaks 1664 cm-1, 600 cm-1, 1050 cm-1, 3234 cm-1, 957 cm-1, and 610 cm-1 in the Figure 5 FTIR spectral plots.

9. In Section 3.5 (XRD Result), please mark the two diffraction peaks (18.60° and 20.60°) in the Figure 6 XRD plot.

10. Please correct the section numbering from Section 3.3 (Mechanical studies) onwards.

11. Please correct the figure caption for Figure 8 – (e) is labelled as fouling ratio and (f) as fouling resistance, whereby it should be the other way around.

Reviewer: 3

Comments to the Author
In your manuscript, the AG usage as an additive embed into a PVDF membrane polymer solution. And this study was to evaluate the effect of different AG concentrations on the performance of PVDF membranes by observing some important parameters such as hydrophilicity, morphological membrane structure, chemical membrane surface, flux, porosity, pore size, and mechanical strength. Although plenty of data are presented, there were still some shortcomings in the paper. I believe the paper may be accepted for publication after major revision.
1. When the addition of AG increased from 1.0 wt% to 1.5 wt%, please explain the reason for the slight increase of membrane pore size.
2. “The slight decrease of tensile strength for PVDF/AG-1.5 could be allowed to the enhanced membrane porosity” in line 46 on page 10, please use additional experiment or literature example to confirm this.
3. In figure 6, please explain the reason for the enhancement of PVDF/AG-1.5 sharp peak at 20.6°.
4. In Figure 7, there are some areas on the surface of the membrane that are not resistant to electron radiation. It is recommended that the replacement area be rescanned.
5. When the addition of AG increased from 0.5 wt% to 1.0 wt%, please explain the reason for the decrease of Flux Recovery.
6. It is suggested to readjust the size and spacing of the pictures in Figure. 8(e) and Figure. 8(f).
7. There have been lots of papers reporting the membrane including the additives to improve the application, and these works need to be reviewed completely, such as [Editor removed the references].

Mengirim revisi paper, 27 Februari 2023

Enhancing antifouling characteristics and performance against protein macromolecule foulant on PVDF membrane Ultrafiltration with Eco-Friendly Arabic Gum Additive

Radenrara Dewi Artanti Putri[a,b,c,*], Herlambang Abriyanto[b,c], Ria Desiriani[b,c], Abdullah Malik Islam Filardli[b,c], Zuhriyan Ash Shiddieqy Bahlawan[a], Maharani Kusumaningrum[a], Gita Putri Prastiwi [b,c], Rica Raihana [b,c], Desy Hikmatul Siami[a], Randi Aswar[a]

[a]Department of Chemical Engineering, Faculty of Engineering, Universitas Negeri Semarang , Semarang, Indonesia

[b]Department of Chemical Engineering, Faculty of Engineering, Diponegoro University, Semarang, Indonesia

[c]Membrane Research Center (MeR-C), Integrated Laboratory for Research and Services, Diponegoro University, Semarang, Indonesia

Corresponding author: dewi.artanti@mail.unnes.ac.id

Abstract

In this study, the effects of Arabic Gum (AG) on the separation performance of polyvinylidene fluoride (PVDF) membranes were investigated. The membrane properties were characterized using scanning electron microscope energy dispersive X-ray (SEM - EDX), Fourier transform infrared (FTIR), tensile strength tester, and contact angle. Results showed that the incorporation of AG from 0.5 wt% to 1.5 wt% into PVDF membrane could increase pure water flux from 47.46 L/m^2.h to 66.04 L/m^2.h and porosity from 53 % to 58 %. Moreover, the highest flux recovery was obtained by PVDF/AG-1.5 membrane, revealing the improvement in fouling resistance against bovine serum albumin (BSA). However, the addition of AG from 0.5 wt% to 1.5 wt% did not affect to increase of membrane mechanical strength and the efficiency of the membranes for BSA rejection. SEM, XRD and FTIR analyses confirmed the successful incorporation of AG, which improved membrane surface hydrophilicity as compared with the pristine PVDF membrane. Overall, the obtained result showed that the incorporation of AG could attain synergy benefits in enhancing the membrane properties and performance.

Keyword : Ultrafiltration membrane, Arabic gum, PVDF, Antifouling

1. Introduction

In the past few decades, membrane separation technology becomes an important role in water purification and wastewater treatment owing to their selectivity and good chemical stability[1–3]. Among various membrane polymers, polyvinylidene fluoride (PVDF) is a commonly used and promising one due to its excellent mechanical strength and high chemical resistance [4–6].

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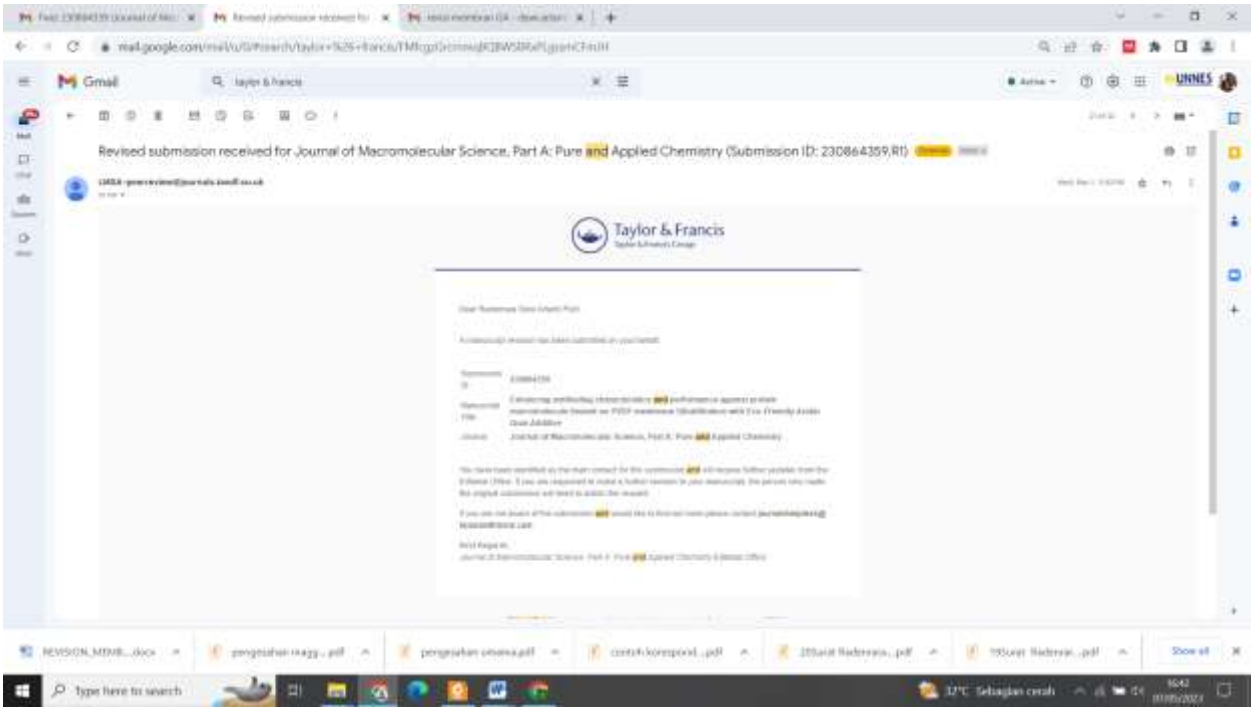

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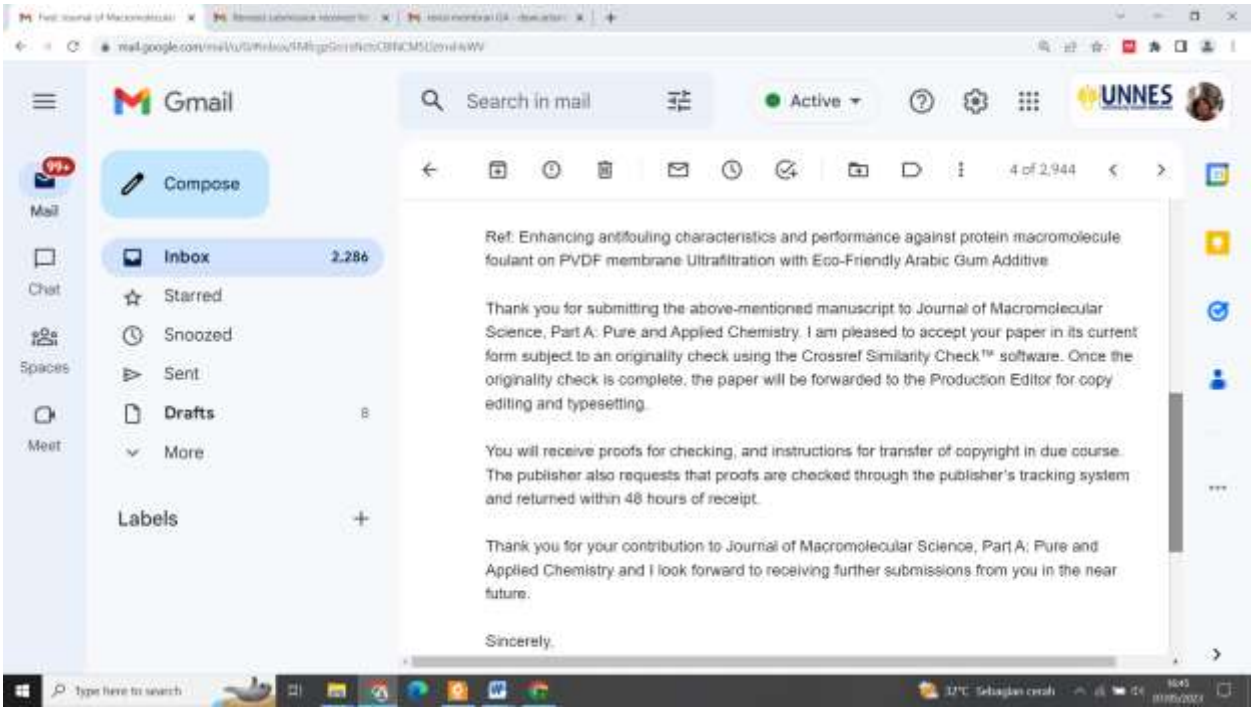

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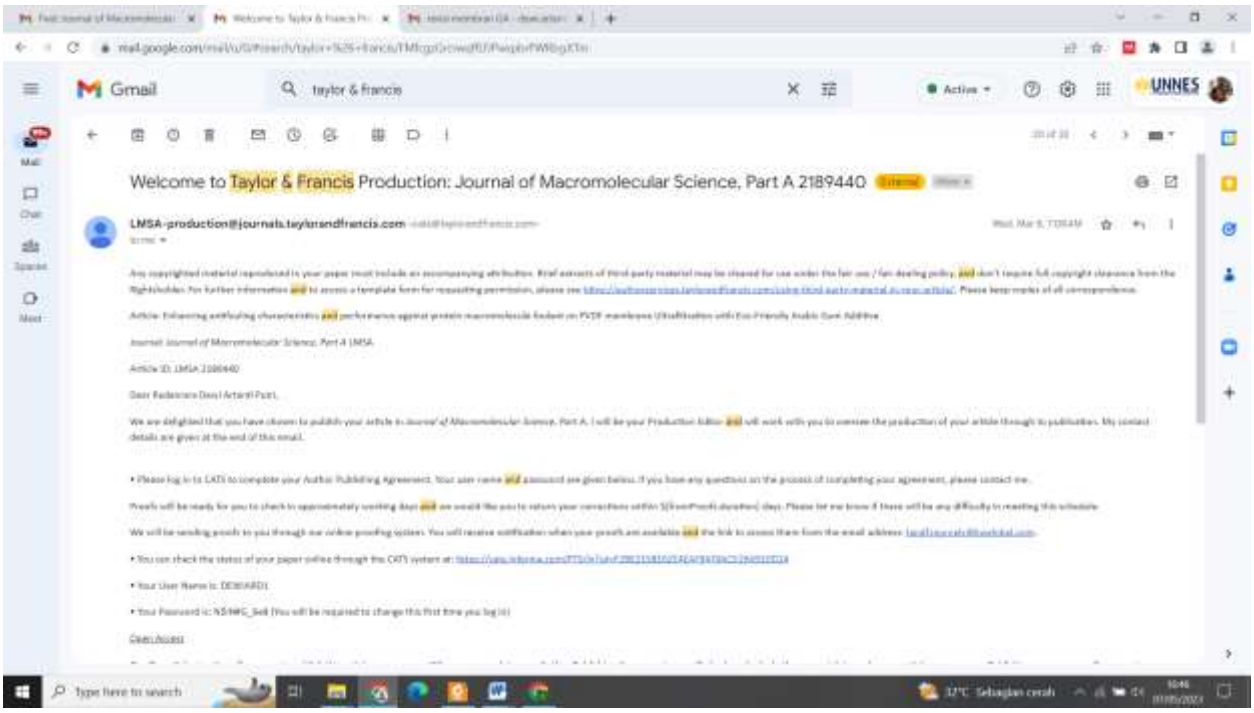

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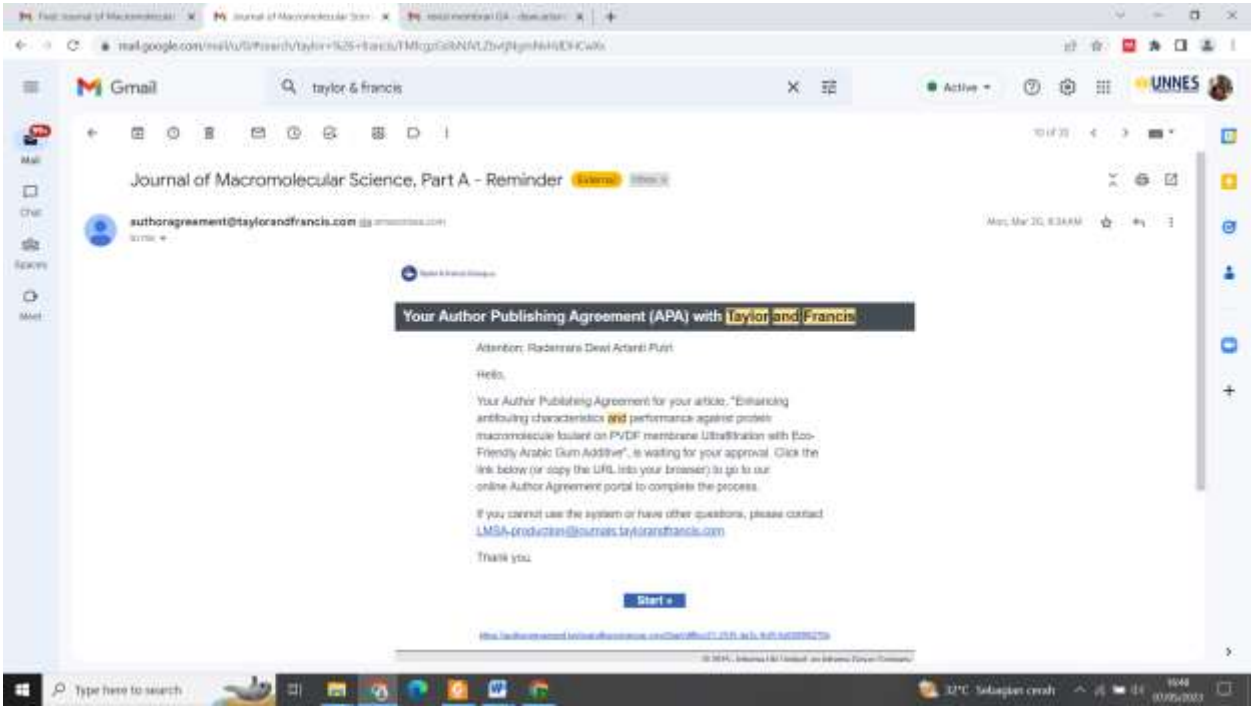

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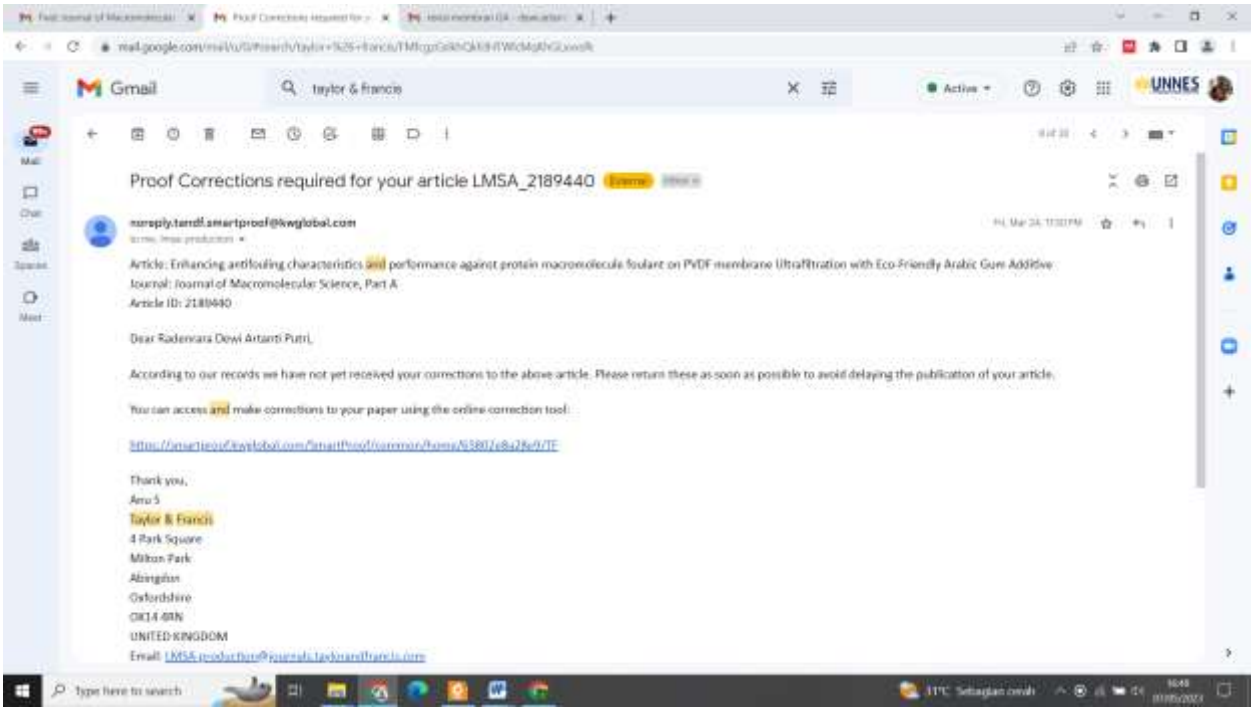

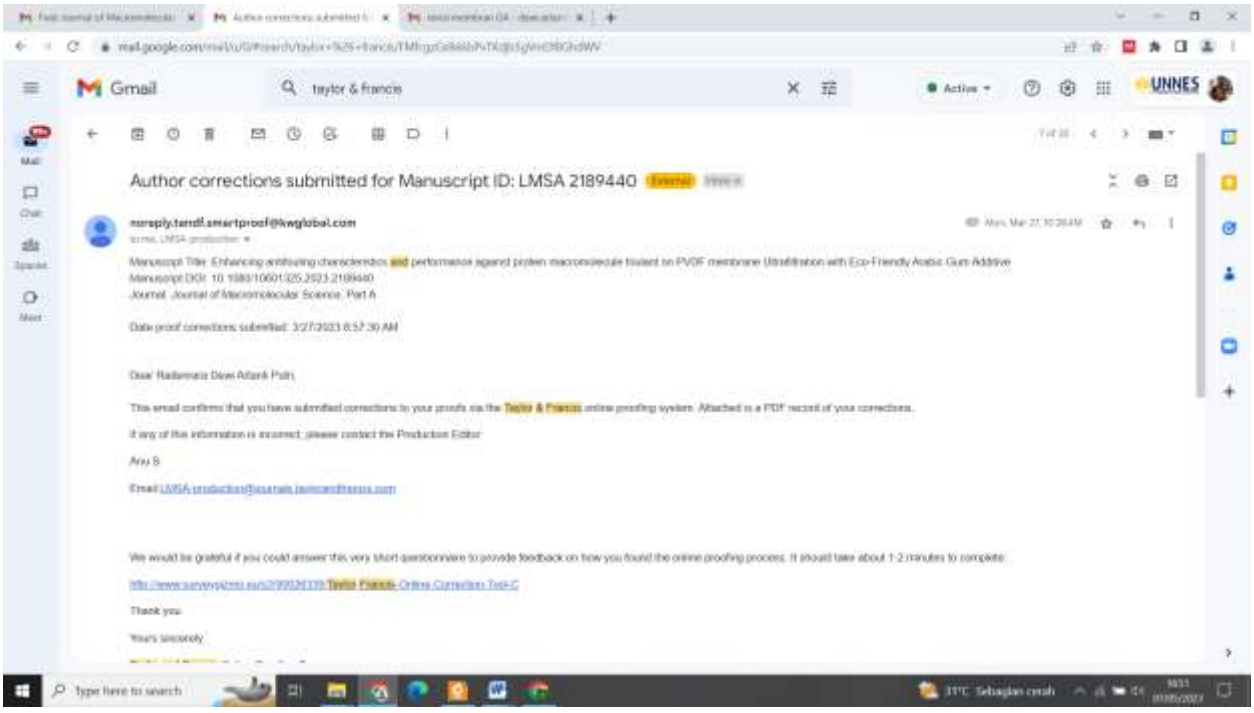

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