

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH: JURNAL ILMIAH
Bukti artikel: C-16

Judul Karya Ilmiah (Artikel) : In-Vitro Study of Polysulfone-polyethylene glycol/chitosan (PEG-PSf/CS) Membranes for Urea and Creatinine Permeation

Jumlah Penulis : 7 Orang Penulis anggota

Nama Penulis : Retno Ariadi Lusiana, Nurwarrohman Andre Sasongko, Vivi Dia A. Sangkota, Nor Basid Adiwibawa Prasetya, Parsaoran Siahaan, Agung Abadi Kiswandono, Mohd Hafiz Dzafan Othman

Identitas Jurnal Ilmiah

a. Nama Jurnal : Jurnal Kimia Sains dan Aplikasi

b. Nomor ISSN : 1410-8917

c. Volume, No, Bulan, Tahun : Vol. 23, issue 8, hal 283-289. Tahun 2020

d. Penerbit : Fakultas Sains dan Matematika Universitas Diponegoro

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Kategori Publikasi Jurnal Ilmiah : ☐ Jurnal Ilmiah Internasional Bereputasi
 (beri Ppada kategori yang tepat) ☐ Jurnal Ilmiah Internasional
☒ Jurnal Ilmiah Nasional Terakreditasi (Sinta 2) mulai Vol.21 No. 4 (2018) hingga Vol. 26 No. 3 (2023)
☐ Jurnal Ilmiah Nasional Terindeks DOAJ
☐ Jurnal Ilmiah Nasional Tidak terakreditasi

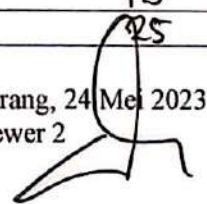
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c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	7.5	7.4
d. Kelengkapan unsur dan kualitas penerbit (30%)	7.5	7.45
Total = (100%)	25	29.65

Reviewer 1


Prof. Drs. Gunawan, M.Si., Ph.D.
 NIP. 196408251991031001
 Unit kerja:
 Departemen Kimia FSM Undip
 Jabatan Fungsional: Guru Besar
 Bidang Ilmu: Kimia

Semarang, 24 Mei 2023
 Reviewer 2


Prof. Dr. M. Cholid Djunaidi, S.Si, M.Si
 NIP. 197007021996031004
 Unit kerja:
 Departemen Kimia FSM Undip
 Jabatan Fungsional: Guru Besar
 Bidang Ilmu: Kimia

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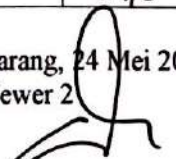
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Komponen yang Dinilai	Nilai Reviewer		Nilai Rata-rata
	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi jurnal (10%)	2,4	2,5	2,45
b. Ruang lingkup dan kedalaman pembahasan (30%)	7,7	7,9	7,35
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	7,4	7,9	7,4
d. Kelengkapan unsur dan kualitas penerbit (30%)	7,5	7,9	7,45
Total = (100%)	24,6	29,7	24,65

Reviewer 1


Prof. Drs. Gunawan, M.Si., Ph.D.
 NIP. 196408251991031001
 Unit kerja:
 Departemen Kimia FSM Undip
 Jabatan Fungsional: Guru Besar
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Semarang, 24 Mei 2023
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Prof. Dr. M. Cholid Djunaidi, S.Si, M.Si
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(beri pada kategori yang tepat) ☐ Jurnal Ilmiah Internasional

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Hasil Penilaian Peer Review:

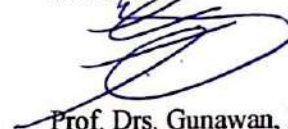
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	Internasional Bereputasi (40)	Internasional (30)	Nasional Terakreditasi (25)	Nasional Terindeks DOAJ dll. (20)	Nasional Tidak Terakreditasi (10)	
a. Kelengkapan unsur isi jurnal (10%)			2,5			2,4
b. Ruang lingkup dan kedalaman pembahasan (30%)			7,5			7,3
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)			7,5			7,4
d. Kelengkapan unsur dan kualitas penerbit (30%)			7,5			7,5
Total = (100%)			25			24,6
Kontribusi Pengusul (Penulis anggota)	40% × : 6 =					

Komentar Peer Review:

- a. **Kelengkapan dan kesesuaian unsur:** Penulisan paper ini sudah sesuai dengan kaidah penulisan jurnal mencakup unsur judul, penulis, institusi, abstrak, kata kunci, pendahuluan, metodologi, hasil dan pembahasan, kesimpulan, acknowledgement, dan referensi. Satu bagian dengan bagian lainnya saling berhubungan dan saling melengkapi. Topik yang dibahas sesuai dengan bidang dari penulis pertama yaitu sintesis material membran dan juga sesuai dengan bidang penulis anggota.
- b. **Ruang lingkup dan kedalaman pembahasan:** Pembahasan paper ini sesuai dengan ruang lingkup Jurnal Kimia Sains dan Aplikasi yang berfokus pada pengembangan kimia dan termasuk di dalamnya adalah material membran. Sebanyak 22 jurnal dan buku dijadikan referensi menunjukkan bahwa paper ini memiliki pembahasan yang cukup luas dan mendalam. Adanya 7 figures dan 4 tabel disajikan yang menandakan bahwa paper memiliki kedalaman yang cukup baik dalam memberikan informasi.
- c. **Kecukupan dan kemutakhiran data/informasi dan metodologi:** Penyajian data sangat lengkap dan memberikan informasi terkini melalui gambar spektra FTIR, gambar morfologi dengan SEM, gambar tetes air untuk uji hidrofilisitas dan uji kimia dengan UV-visible. Data yang disajikan memberikan gambaran yang lengkap dan berhubungan terhadap apa yang disampaikan dalam pembahasan terkait modifikasi membran berbasis Polisulfon melalui penambahan PEG dan kitosan.
- d. **Kelengkapan unsur dan kualitas penerbit:** Jurnal Kimia Sains dan Aplikasi diterbitkan oleh Departemen Kimia Undip dengan akreditasi Sinta 2. Similarity index berdasarkan Turnitin adalah 19% sehingga memiliki orisinalitas baik.

Semarang, 16 Mei 2023

Reviewer-1



Prof. Drs. Gunawan, M.Si., Ph.D.

NIP. 196408251991031001

Unit kerja :

Departemen Kimia FSM Undip

Jabatan Fungsional: Guru Besar

Bidang ilmu: Kimia

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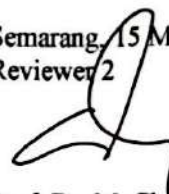
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Komponen yang Dinilai	Nilai Maksimal Jurnal Ilmiah					Nilai Akhir Yang Diperoleh
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a. Kelengkapan unsur isi jurnal (10%)			2,5			2,5
b. Ruang lingkup dan kedalaman pembahasan (30%)			7,5			7,5
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)			7,5			7,5
d. Kelengkapan unsur dan kualitas penerbit (30%)			7,5			7,5
Total = (100%)			25			24,7
Kontribusi Pengusul (Penulis anggota)	40% x 24,7 : 6 = 1,65					

Komentar Peer Review:

- a. **Kelengkapan dan kesesuaian unsur:** Artikel ini disusun secara lengkap berdasarkan guideline yang disediakan oleh penerbit. Objektif dari paper ini juga telah dipaparkan dengan baik. Selain itu, setiap bagian disampaikan dengan alur yang baik dan runut.
- b. **Ruang lingkup dan kedalaman pembahasan:** Artikel ini membahas tentang modifikasi membran berbasis polisulfon menggunakan PEG dan kitosan. Karakter dan kinerja dari membran termodifikasi dibahas dengan cukup detail dan komprehensif. Hasil pengamatan dijabarkan dalam 7 gambar dan 3 tabel yang dilengkapi dengan pembahasan yang memadai.
- c. **Kecukupan dan kemutahiran data/informasi dan metodologi:** Data yang disajikan dalam paper ini berkecukupan dan diperoleh dengan menggunakan instrumentasi yang lengkap, diantaranya: FTIR, contact angle, dan SEM. Metodologi yang digunakan cukup terkini dan dilengkapi dengan literatur yang mayoritas terbaru (kurang dari 10 tahun).
- d. **Kelengkapan unsur dan kualitas penerbit:** Jurnal Kimia Sains dan Aplikasi diterbitkan oleh Departemen Kimia Undip dan termasuk dalam kategori jurnal Sinta 2. Similarity indeks dari paper ini menggunakan turnitin sebesar 19% dan menunjukkan orisinalitas artikel cukup baik.

Semarang, 15 Mei 2023
Reviewer 2



Prof. Dr. M. Cholid Djunaidi, S.Si, M.Si
NIP. 197007021996031004

Unit kerja :
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Jabatan Fungsional: Guru Besar
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In-Vitro Study of Polysulfone-polyethylene glycol/chitosan (PEG-PSf/CS) Membranes for Urea and Creatinine Permeation

Retno Ariadi Lusiana (<https://scholar.google.com/scholar?q=Retno+Ariadi+Lusiana>)¹  [\(javascript:openRTWindow\('https://ejournal.undip.ac.id/index.php/ksa/rt/emailAuthor/27248/0'\)\)](https://ejournal.undip.ac.id/index.php/ksa/rt/emailAuthor/27248/0)  [\(http://orcid.org/0000-0003-1184-9125\)](http://orcid.org/0000-0003-1184-9125)  [\(https://www.scopus.com/authid/detail.uri?authorId=55992806700\)](https://www.scopus.com/authid/detail.uri?authorId=55992806700),
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¹Chemistry Department, Faculty of Sciences and Mathematics, Diponegoro University, Indonesia

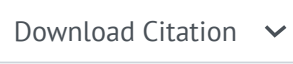
²Chemistry Department, MIPA, Universitas Lampung, Indonesia

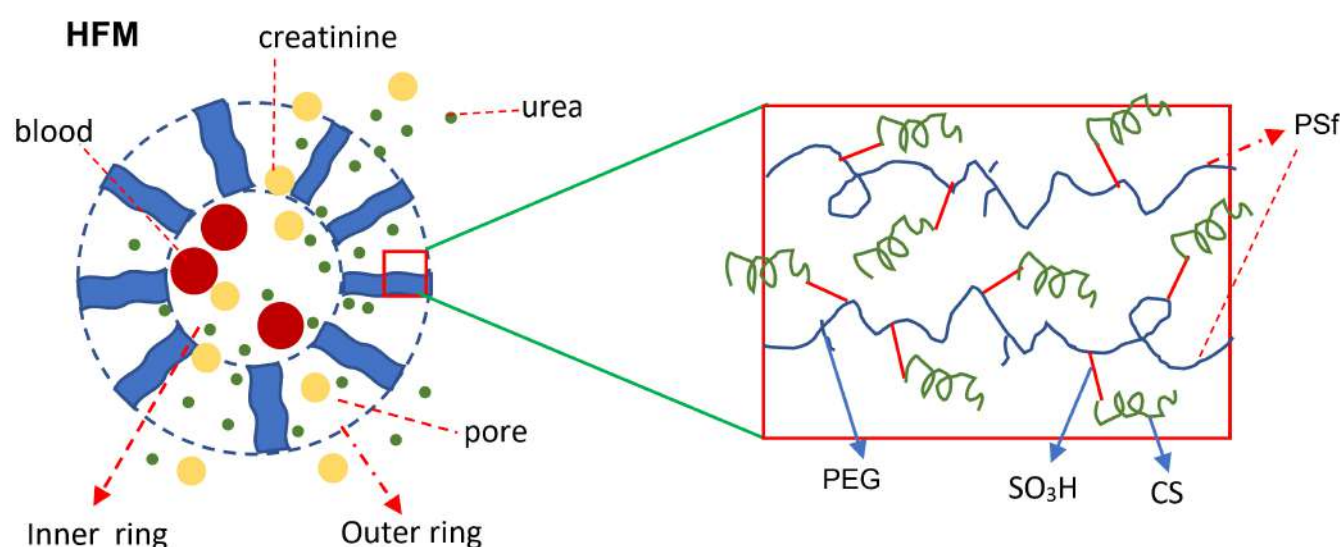
³Advanced Membrane Technology Research Centre (AMTEC), Universiti Teknologi Malaysia, Malaysia

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Abstract

High concentrations of creatinine and urea in the blood can be removed by dialysis using semipermeable membranes that are selective for certain species and hold other species through diffusion processes. This ability requires a membrane that has an active side, which functions as a targeted species identifier. The membrane must be biocompatible because the membrane will be in direct contact with the body's biological systems. The membrane material that is made must be acceptable to the blood system so that there is no rejection from the body and have a large contact area to obtain an effective diffusion process. For this reason, a hollow fiber

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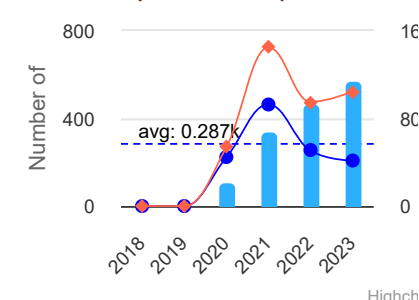
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- > **Phytochemical Test, Determination of Total Phenol, Total Flavonoids and Antioxidant Activity of Ethanol Extract of Moringa Leaves (Moringa oleifera Lam)** (<https://ejournal.undip.ac.id/index.php/ksa/article/view/27248/0>)
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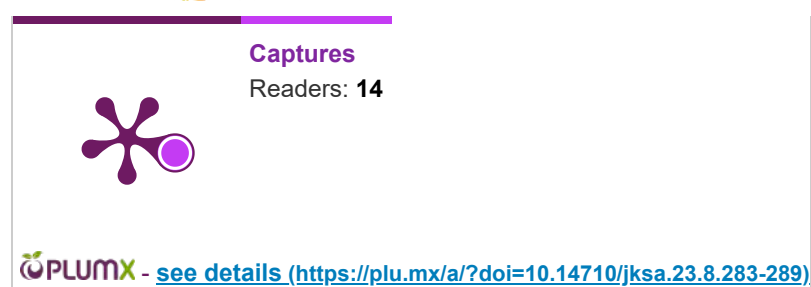
membrane (HFM) is needed. One of the synthetic polymers used as the base material for HFM is PSf. PSf has mechanical strength, heat resistance, and is easily formed into HFM. However, PSf has disadvantages such as lack of active side and less compatible with blood due to its hydrophobic properties. Modification using PEG and chitosan will reduce the hydrophobicity of the PSf. Membrane results were analyzed the physical, chemical, and transportability for urea and creatinine. The results of functional group characterization by FTIR show that the modification reaction was successfully carried out on polysulfone to produce PEG-PSf/CS. The modification succeeded in making the PSf membrane more hydrophilic, as evidenced by a decrease in the contact angle from 69.4° (PSf) to 53° (PEG-PSf/CS). Water uptake capability increases to 609%, and membrane porosity increases porosity increased from 72 to 83%. The water flux is also increased. Creatinine clearance ability increases from 0.09 mg/dL to 0.25 mg/dL. Urea clearance ability increases from 2.3 mg/dL to 3.07 mg/dL. The SEM image showed that the modification makes the membranes more porous.

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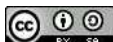
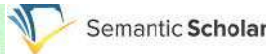
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