LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH: JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Ultrafiltration Membrane for Degumming of Crude Palm Oil-Isopropanol Mixture		
Jumlah Penulis	:	3 orang		
Status Pengusul	:	Penulis pertama/ ~~penulis ke - 3/ penulis korespondensi~~		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Chemical and Biochemical Engineering Quarterly
		b. Nomor ISSN	:	0352-9568
		c. Volume, nomor, bulan, tahun	:	Vol. 32 No. 3, Juli 2018
		d. Penerbit	:	Croatian Society of Chemical Engineers
		e. DOI Artikel	:	10.15255/CABEQ.2017.1244
		f. Alamat web Jurnal	:	http://silverstripe.fkit.hr/cabeq/
		Alamat artikel	:	http://silverstripe.fkit.hr/cabeq/assets/Uploads/05-3-2018.pdf
		g. Terindeks	:	SCOPUS (Q2)

Kategori Publikasi Jurnal Ilmiah
(Beri ✓pada katergori yang tepat)

- [✓] Jurnal Ilmiah Internasional
- [ ] Jurnal Ilmiah Nasional Terakreditasi
- [ ] Jurnal Ilmiah Nasional Tidak Terakreditasi

Hasil Penilaian *Peer Review*

Komponen yang Dinilai	Nilai Reviewer		Nilai Rata-rata
	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi Artikel (10%)	4	4	
b. Ruang lingkup dan kedalaman pembahasan (30%)	11.2	10	
c. Kecukupan dan kemutakhiran data/ informasi dan metodologi (30%)	11.2	11	
d. Kelengkapan unsur dan kualitas terbitan/ jurnal (30%)	11.2	11	
Total = (100 %)	37.6	36	36.8
Nilai pengusul = (60% x 36.8) = 22.08			

Semarang,

Reviewer 2

Prof. Dr. Andri Cahyo Kumoro, ST., MT.
NIP. 197405231998021001
Unit Kerja : DepartemenTeknik Kimia FT UNDIP

Reviewer 1

Prof. Dr. Tutuk Djoko Kusworo, ST., M.Eng.
NIP. 197306211997021001
Unit Kerja : DepartemenTeknik Kimia FT UNDIP

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		g. Terindeks	:	SCOPUS (Q2)

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- [ ] Jurnal Ilmiah Nasional Tidak Terakreditasi

Hasil Penilaian *Peer Review*

Komponen yang dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir yang diperoleh
	Internasional [40]	Nasional Terakreditasi [ ]	Nasional Tidak Terakreditasi [ ]	
a. Kelengkapan unsur isi Artikel (10%)	4			**4**
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			**11.2**
c. Kecukupan dan kemutakhiran data/ informasi dan metodologi (30%)	12			**11.2**
d. Kelengkapan unsur dan kualitas terbitan / jurnal (30%)	12			**11.2**
Total = (100%)	**40**			**37.6**
Nilai pengusul = 60% x 37.2 = 22.3				

Catatan penilaian artikel oleh Reviewer:

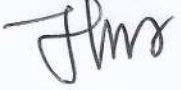
1. Kesesuaian dan kelengkapan unsur isi artikel:
Makalah ini memiliki kelengkapan unsur sebagai makalah ilmiah yang bereputasi. Isis artikel sudah sesuai dengan scope atau bidang pada Jurnal Chemical and Biochemical Engineering Quarterly (10%)

2. Ruang lingkup dan kedalaman pembahasan:
Pembahasan yang dilakukan cukup mendalam, hal ini ditandai dengan lebih dari 20 paper yang disitasi pada pembahasannya (cross-reference) sehingga pembahesan yang dilakukan menjadi tajam dan baik (28%)

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:
Data yang digunakan pada paper ini cukup mutakhir, sekitar 64% merupakan referensi baru dan baik sebegai reference. Penelitian yang dilakukan juga membahas trend masalah saat ini (28%).

4. Kelengkapan unsur dan kualitas terbitan:
Penerbit cukup baik (Q2). Namun penerbit tidak terlalu teliti sehingga format pada referensi no. 8 tidak konsisten dengan yang lainnya. (28%)

Semarang,
Reviewer I



Prof. Dr. Ir. Tutuk Djoko Kusworo, ST., M.Eng.
NIP. 197306211997021001
Unit Kerja : DepartemenTeknik Kimia FT UNDIP

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Hasil Penilaian *Peer Review*

Komponen yang dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir yang diperoleh
	Internasional [40]	Nasional Terakreditasi [ ]	Nasional Tidak Terakreditasi [ ]	
a. Kelengkapan unsur isi artikel (10%)	4			**4**
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			**10**
c. Kecukupan dan kemutakhiran data/ informasi dan metodologi (30%)	12			**11**
d. Kelengkapan unsur dan kualitas terbitan/ jurnal (30%)	12			**11**
Total = (100%)	**40**			**36**
Nilai pengusul = 60% x 36 = 21,6				

Catatan penilaian artikel oleh Reviewer:

1. Kesesuaian dan kelengkapan unsur isi artikel: Artikel ini mencakup judul, abstrak, metode percobaan, hasil dan pembahasan, kesimpulan, ucapan terima kasih dan daftar pustaka.

2. Ruang lingkup dan kedalaman pembahasan: Penelitian dimaksudkan untuk memisahkan gum dan fosfolipid dari minyak sawit mentah dan campurannya dengan isopropanol menggunakan membrane sebagai metode alternatif metode pemisahan yang hemat energi. Beberapa model fisika terkait dengan penerapan system membrane (fluks, rejeksi dan fouling) juga diujikan. Hasil percobaan dibahas dengan cukup jelas secara teoritik dan diskriptif dengan dukungan pustaka yang memadai walaupun hanya 29,55% dr semua pustaka yang digunakan (44 buah).

3. Kecukupan dan kemutakhiran data/informasi dan metodologi: Latar belakang, metodologi serta hasil penelitian disajikan dengan cukup baik. Namun, dari 44 pustaka yang digunakan hanya 30% pustaka yang bersifat mutakhir (10 th terakhir).

4. Kelengkapan unsur dan kualitas terbitan: Journal ini tergolong dalam jurnal internasional bereputasi Q3 (process chemistry and technology) dengan SJR 0.358 dan H index 33 pada pemeringkatan jurnal Scimago tahun 2018 (pada saat artikel terbit). Editorial board berasal dari berbagai negara, terdapat pedoman penulisan yang jelas dan format penulisan konsisten. Pada umumnya, artikel yang disajikan merupakan hasil karya penulis dari berbagai negara. Penerbit jurnal ini adalah Croatian Society of Chemical Engineers. Gaya selingkung yang diterapkan jurnal ini sangat baik. Sebanyak 10 artikel yg terbit pada volume tsb ditulis oleh penulis yg berasal dari 9 negara.

Semarang, 15 Januari 2020
Reviewer 2

Prof. Dr. Andri Cahyo Kumoro, ST., M.T.
NIP. 197405231998021001
Unit Kerja: DepartemenTeknik Kimia FT UNDIP

Chemical and Biochemical Engineering Quarterly Open Access
Volume 32, Issue 3, October 2018, Pages 325-334

Ultrafiltration membrane for degumming of crude palm oil-isopropanol mixture (Article) (Open Access)

Aryanti, N.[a,b], Wardhani, D.H.[a], Nafiunisa, A.[a]

[a]Department of Chemical Engineering, Diponegoro University, Indonesia
[b]Membrane Research Centre (MeR-C), Diponegoro University, Indonesia

Abstract

View references (44)

Ultrafiltration (UF) is a membrane technology that has been applied for crude palm oil (CPO) degumming. It is considered as an alternative for the conventional CPO degumming technology because of its lower energy consumption, no need for the addition of chemicals, and almost no loss of natural oil. In this research, we separated a CPO-isopropanol mixture via laboratory-made flat-sheet polyethersulfone (PES) UF. Flux profiles confirmed that the increase in the CPO concentration resulted in lower fluxes. However, increasing the temperature from 30 °C to 45 °C initially raised the flux, but it was further decreased when the feed temperature was raised from 40 °C to 45 °C. Using UF of the CPO-isopropanol mixture at crude oil concentrations of 30 % and 40 %, we were able to reject more than 99 % phospholipids and nearly 93 % phospholipids, respectively. However, the separation of free fatty acids using this process was ineffective due to the small size of free fatty acids. Through the evaluation of the blocking mechanism in the Hermia model, it was proposed that the standard and intermediate blocking were the dominant mechanisms of filtration of CPO at a concentration of 30 and 40 %, and 50 and 60 %, respectively.

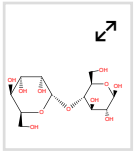
SciVal Topic Prominence

Topic: Nanofiltration | Membranes | OSN membranes

Prominence percentile: 97.950

Chemistry database information

Substances



Author keywords

Crude palm oil | Degumming | Ultrafiltration

Indexed keywords

Engineering controlled terms: Crude oil | Degumming | Energy utilization | Fatty acids | Membrane technology | Mixtures | Phospholipids | Ultrafiltration

Engineering uncontrolled terms: Blocking mechanisms | Crude palm oil | Dominant mechanism | Feed temperature | Isopropanol mixtures | Oil concentration | Polyethersulfones | Ultra-filtration membranes

Engineering main heading: Palm oil

Funding details

Funding sponsor	Funding number	Acronym
Ministry of Science Research and Technology		
Foundation for Fundamental Research on Matter		

Funding text

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Publisher: Assoc. of Chemists and Chemical Engineers of Croatia

References (44)

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1 Subramanian, R., Nakajima, M., Raghavarao, K.S.M.S., Kimura, T.
Processing vegetable oils using nonporous denser polymeric composite membranes
(2004) *JAOCS, Journal of the American Oil Chemists' Society*, 81 (4), pp. 313-322. Cited 44 times.
http://www.aocs.org/press
doi: 10.1007/s11746-004-0901-z
View at Publisher

2 Mba, O.I., Dumont, M.-J., Ngadi, M.
Palm oil: Processing, characterization and utilization in the food industry - A review
(2015) *Food Bioscience*, 10, pp. 26-41. Cited 99 times.
http://www.journals.elsevier.com/food-bioscience/
doi: 10.1016/j.fbio.2015.01.003
View at Publisher

3 Arora, S., Manjula, S., Gopala Krishna, A.G., Subramanian, R.
Membrane processing of crude palm oil
(2006) *Desalination*, 191 (1-3), pp. 454-466. Cited 28 times.
doi: 10.1016/j.desal.2005.04.129
View at Publisher

4 Basiron, Y.
Palm oil production through sustainable plantations
(2007) *European Journal of Lipid Science and Technology*, 109 (4), pp. 289-295. Cited 304 times.
doi: 10.1002/ejlt.200600223
View at Publisher

5 Banu, M., Siddaramaiah, Prasad, N.
Radical scavenging activity of tertiary butyl hydroquinone and assessment of stability of palm oil (Elaeis guineensis) by ultrasonic studies (Open Access)

(2016) *Chemical and Biochemical Engineering Quarterly*, 30 (4), pp. 477-487. Cited 2 times.
http://hrcak.srce.hr/file/254191
doi: 10.15255/CABEQ.2015.2185

View at Publisher

6 Edem, D.O.
Palm oil: Biochemical, physiological, nutritional, hematological, and toxicological aspects: A review

(2002) *Plant Foods for Human Nutrition*, 57 (3-4), pp. 319-341. Cited 233 times.
doi: 10.1023/A:1021828132707

View at Publisher

7 Md Sarip, M.S., Morad, N.A., Yamashita, Y., Tsuji, T., Yunus, M.A.C., Aziz, M.K.A., Lam, H.L.
Crude palm oil (CPO) extraction using hot compressed water (HCW)

(2016) *Separation and Purification Technology*, 169, pp. 103-112. Cited 8 times.
http://www.journals.elsevier.com/separation-and-purification-technology/
doi: 10.1016/j.seppur.2016.06.001

View at Publisher

8 Wang, T.
Soybean Oil

(2011) *Vegetable Oils in Food Technology: Composition, Properties and Uses, Second Edition*, pp. 59-105. Cited 6 times.
http://onlinelibrary.wiley.com/book/10.1002/9781444339925
ISBN: 978-144433268-1
doi: 10.1002/9781444339925.ch3

View at Publisher

9 Fornasero, M.L., Marenchino, R.N., Pagliero, C.L.
Deacidification of soybean oil combining solvent extraction and membrane technology (Open Access)

(2013) *Advances in Materials Science and Engineering*, 2013, art. no. 646343. Cited 6 times.
doi: 10.1155/2013/646343

View at Publisher

10 Liu, K.-T., Liang, F.-L., Lin, Y.-F., Tung, K.-L., Chung, T.-W., Hsu, S.-H.
A novel green process on the purification of crude Jatropha oil with large permeate flux enhancement

(2013) *Fuel*, 111, pp. 180-185. Cited 4 times.
doi: 10.1016/j.fuel.2013.04.049

View at Publisher

11 de Morais Coutinho, C., Chiu, M.C., Basso, R.C., Ribeiro, A.P.B., Gonçalves, L.A.G., Viotto, L.A.
State of art of the application of membrane technology to vegetable oils: A review

(2009) *Food Research International*, 42 (5-6), pp. 536-550. Cited 91 times.
doi: 10.1016/j.foodres.2009.02.010

View at Publisher

12 Ladhe, A.R., Krishna Kumar, N.S.
Application of Membrane Technology in Vegetable Oil Processing

(2010) *Membrane Technology*, pp. 63-78. Cited 9 times.
http://www.sciencedirect.com/science/book/9781856176323
ISBN: 978-185617632-3
doi: 10.1016/B978-1-85617-632-3.00005-7

View at Publisher

13 Ong, K.K., Fakhru'l-Razi, A., Baharin, B.S., Hassan, M.A.
Degumming of crude palm oil by membrane filtration

(1999) *Artificial Cells, Blood Substitutes, and Immobilization Biotechnology*, 27 (5-6), pp. 381-385. Cited 9 times.
www.tandf.co.uk/journals/titles/10731199.asp
doi: 10.3109/10731199909117707

View at Publisher

14 Lai, S.O., Heng, S.L., Chong, K.C., Lau, W.J.
Deacidification of palm oil using solvent extraction integrated with membrane technology

(2016) *Jurnal Teknologi*, 78 (12), pp. 69-74.
http://www.jurnalteknologi.utm.my/index.php/jurnalteknologi/article/download/10069/6017
doi: 10.11113/jt.v78.10069

View at Publisher

15 Azmi, R.A., Goh, P.S., Ismail, A.F., Lau, W.J., Ng, B.C., Othman, N.H., Noor, A.M., (...), Yusoff, M.S.A.
Deacidification of crude palm oil using PVA-crosslinked PVDF membrane

(2015) *Journal of Food Engineering*, 166, pp. 165-173. Cited 12 times.
http://www.sciencedirect.com/science/journal/02608774
doi: 10.1016/j.jfoodeng.2015.06.001

View at Publisher

16 Purwasasmita, M., Nabu, E.B.P., Khoiruddin, Wenten, I.G.
Non dispersive chemical deacidification of crude palm oil in hollow fiber membrane contactor (Open Access)

(2015) *Journal of Engineering and Technological Sciences*, 47 (4), pp. 426-446. Cited 27 times.
http://journals.itb.ac.id/index.php/jets/article/download/475/1049
doi: 10.5614/j.eng.technol.sci.2015.47.4.6

View at Publisher

17 Majid, R.A., May, C.Y., Mohamad, A.W.
Performance of polymeric membranes for phospholipid removal from residual palm fibre oil/hexane miscella

(2013) *Journal of Oil Palm Research*, 25 (AUG), pp. 253-264. Cited 3 times.
http://palmoilis.mpob.gov.my/publications/joprv25aug2013-rusnani.pdf

18 Ochoa, N., Pagliero, C., Marchese, J., Mattea, M.
Ultrafiltration of vegetable oils degumming by polymeric membranes

(2001) *Separation and Purification Technology*, 22-23, pp. 417-422. Cited 70 times.
doi: 10.1016/S1383-5866(00)00178-7

View at Publisher

19 Liu, K.-T., Liang, F.-L., Lin, Y.-F., Tung, K.-L., Chung, T.-W., Hsu, S.-H.
A novel green process on the purification of crude Jatropha oil with large permeate flux enhancement

(2013) *Fuel*, 111, pp. 180-185. Cited 4 times.
doi: 10.1016/j.fuel.2013.04.049

View at Publisher

20 Cheryan, M.
Membrane technology in the vegetable oil industry

(2005) *Membrane Technology*, 2005 (2), pp. 5-7. Cited 35 times.
http://www.sciencedirect.com/science/journal/09582118
doi: 10.1016/S0958-2118(05)70387-6

View at Publisher

21 Said, M., Ahmad, A., Mohammad, A.W., Nor, M.T.M., Sheikh Abdullah, S.R.
Blocking mechanism of PES membrane during ultrafiltration of POME

(2015) *Journal of Industrial and Engineering Chemistry*, 21, pp. 182-188. Cited 31 times.
http:www.sciencedirect.com/science/journal/1226086X
doi: 10.1016/j.jiec.2014.02.023

View at Publisher

22 Shi, X., Tal, G., Hankins, N.P., Gitis, V.
Fouling and cleaning of ultrafiltration membranes: A review

(2014) *Journal of Water Process Engineering*, 1, pp. 121-138. Cited 220 times.
http://www.journals.elsevier.com/journal-of-water-process-engineering/
doi: 10.1016/j.jwpe.2014.04.003

View at Publisher

23 Ng, C.Y., Mohammad, A.W., Ng, L.Y., Jahim, J.M.
Membrane fouling mechanisms during ultrafiltration of skimmed coconut milk

(2014) *Journal of Food Engineering*, 142, pp. 190-200. Cited 23 times.
http://www.sciencedirect.com/science/journal/02608774
doi: 10.1016/j.jfoodeng.2014.06.005

View at Publisher

24 Guo, X., Gao, W., Li, J., Hu, W.
Fouling and cleaning characteristics of ultrafiltration of hydrophobic dissolved organic matter by a polyvinyl chloride hollow fiber membrane

(2009) *Water Environment Research*, 81 (6), pp. 626-632. Cited 4 times.
http://docserver.ingentaconnect.com/deliver/connect/wef/10614303/v81n6/s8.pdf?expires=1261882936&id=54126926&titleid=11548&accname=Elsevier+Science&checksum=7CD1D76063DF462E1641DFADA9DEF734
doi: 10.2175/106143008X370368

View at Publisher

25 Corbatón-Báguena, M.-J., Álvarez-Blanco, S., Vincent-Vela, M.-C.
Fouling mechanisms of ultrafiltration membranes fouled with whey model solutions

(2015) *Desalination*, 360, pp. 87-96. Cited 38 times.
doi: 10.1016/j.desal.2015.01.019

View at Publisher

26 Vincent Vela, M.C., Álvarez Blanco, S., Lora García, J., Bergantiños Rodríguez, E.
Analysis of membrane pore blocking models adapted to crossflow ultrafiltration in the ultrafiltration of PEG

(2009) *Chemical Engineering Journal*, 149 (1-3), pp. 232-241. Cited 75 times.
doi: 10.1016/j.cej.2008.10.027

View at Publisher

27 Wibisono, Y., Nugroho, W.A., Chung, T.-W.
Dry degumming of corn-oil for biodiesel using a tubular ceramic membrane
(2014) *Proc. Chem.*, 9, p. 210. Cited 9 times.

28 Aryanti, N., Sandria, F.K.I., Putriadi, R.H., Wardhani, D.H.
Evaluation of micellar-enhanced ultrafiltration (MEUF) membrane for dye removal of synthetic Remazol dye wastewater (Open Access)

(2017) *Engineering Journal*, 21 (3), pp. 23-35. Cited 2 times.
http://engj.org/index.php/ej/article/view/1318/571
doi: 10.4186/ej.2017.21.3.23

View at Publisher

29 Aryanti, N., Wardhani, D.H., Supandi, S.
Flux profiles and mathematical modeling of fouling mechanism for ultrafiltration of konjac glucomannan

(2016) *Scientific Study and Research: Chemistry and Chemical Engineering, Biotechnology, Food Industry*, 17 (2), pp. 125-137. Cited 8 times.
http://pubs.ub.ro/?pg=revues&rev=cscc6

30 Aryanti, N., Ika Sandria, F.K., Wardhani, D.H.
Blocking mechanism of ultrafiltration and micellar-enhanced ultrafiltration membrane for dye removal from model waste water

(2017) *Advanced Science Letters*, 23 (3), pp. 2598-2600. Cited 3 times.
http://www.ingentaconnect.com/contentone/asp/asl/2017/00000023/00000003/art00282
doi: 10.1166/asl.2017.8730

View at Publisher

31 HERMIA, J.
CONSTANT PRESSURE BLOCKING FILTRATION LAWS - APPLICATION TOPOWER-LAW NON-NEWTONIAN FLUIDS.

(1982) *TRANS INST CHEM ENG*, V 60 (N 3), pp. 183-187. Cited 863 times.

32 Amin, I.N.H.M., Mohammad, A.W., Markom, M., Peng, L.C., Hilal, N.
Analysis of deposition mechanism during ultrafiltration of glycerin-rich solutions

(2010) *Desalination*, 261 (3), pp. 313-320. Cited 16 times.
http://www.sciencedirect.com
doi: 10.1016/j.desal.2010.04.016

View at Publisher

33 de Melo, J.R.M., Tres, M.V., Steffens, J., Vladimir Oliveira, J., Di Luccio, M.
Desolventizing organic solvent-soybean oil miscella using ultrafiltration ceramic membranes

(2015) *Journal of Membrane Science*, 475, pp. 357-366. Cited 9 times.
www.elsevier.com/locate/memsci
doi: 10.1016/j.memsci.2014.10.029

View at Publisher

34 Velu, S., Muruganandam, L., Arthanareeswaran, G.
Preparation and performance studies on polyethersulfone ultrafiltration membranes modified with gelatin for treatment of tannery and distillery wastewater (Open Access)

(2015) *Brazilian Journal of Chemical Engineering*, 32 (1), pp. 179-189. Cited 10 times.
http://www.scielo.br/readcube/epdf.php?doi=10.1590/0104-6632.20150321s00002965&pid=S0104-66322015001700179&pdf_path=bjce/v32n1/0104-6632-bjce-32-1-0179.pdf
doi: 10.1590/0104-6632.20150321s00002965

View at Publisher

35 Vankelecom, I.F.J., De Smet, K., Gevers, L.E.M., Livingston, A., Nair, D., Aerts, S., Kuypers, S., (...), Jacobs, P.A.
Physico-chemical interpretation of the SRNF transport mechanism for solvents through dense silicone membranes

(2004) *Journal of Membrane Science*, 231 (1-2), pp. 99-108. Cited 108 times.
www.elsevier.com/locate/memsci
doi: 10.1016/j.memsci.2003.11.007

View at Publisher

36 MacHado, D.R., Hasson, D., Semiat, R.
Effect of solvent properties on permeate flow through nanofiltration membranes. Part I: Investigation of parameters affecting solvent flux

(1999) *Journal of Membrane Science*, 163 (1), pp. 93-102. Cited 182 times.
doi: 10.1016/S0376-7388(99)00158-1

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37 de Souza Araki, M., de Morais Coutinho, C., Gonçalves, L.A.G., Viotto, L.A.
Solvent permeability in commercial ultrafiltration polymeric membranes and evaluation of the structural and chemical stability towards hexane

(2010) *Separation and Purification Technology*, 71 (1), pp. 13-21. Cited 26 times.
doi: 10.1016/j.seppur.2009.10.005

View at Publisher

38 Penha, F.M., Rezzadori, K., Proner, M.C., Zin, G., Fogaça, L.A., Petrus, J.C.C., De Oliveira, J.V., (...), Di Luccio, M.
Evaluation of permeation of macauba oil and n-hexane mixtures through polymeric commercial membranes subjected to different pre-treatments (Open Access)

(2015) *Journal of Food Engineering*, 155, pp. 79-86. Cited 11 times.
http://www.sciencedirect.com/science/journal/02608774
doi: 10.1016/j.jfoodeng.2015.01.020

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39 Pagliero, C., Ochoa, N.A., Martino, P., Marchese, J.
Separation of sunflower oil from hexane by use of composite polymeric membranes

(2011) *JAOCS, Journal of the American Oil Chemists' Society*, 88 (11), pp. 1813-1819. Cited 9 times.
doi: 10.1007/s11746-011-1839-3

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40 Manjula, S., Kobayashi, I., Subramanian, R.
Characterization of phospholipid reverse micelles in nonaqueous systems in relation to their rejection during membrane processing

(2011) *Food Research International*, 44 (4), pp. 925-930. Cited 14 times.
doi: 10.1016/j.foodres.2011.01.059

View at Publisher

41 Kim, I.-C., Kim, J.-H., Lee, K.-H., Tak, T.-M.
Phospholipids separation (degumming) from crude vegetable oil by polyimide ultrafiltration membrane

(2002) *Journal of Membrane Science*, 205 (1-2), pp. 113-123. Cited 56 times.
doi: 10.1016/S0376-7388(02)00070-4

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42 Pagliero, C., Mattea, M., Ochoa, N., Marchese, J.
Fouling of polymeric membranes during degumming of crude sunflower and soybean oil

(2007) *Journal of Food Engineering*, 78 (1), pp. 194-197. Cited 43 times.
doi: 10.1016/j.jfoodeng.2005.09.015

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43 Sehn, G.A.R., Gonçalves, L.A.G., Ming, C.C.
Ultrafiltration-based degumming of crude rice bran oil using a polymer membrane (Open Access)

(2016) *Grasas y Aceites*, 67 (1), art. no. e120. Cited 4 times.
http://grasasyaceites.revistas.csic.es/index.php/grasasyaceites/article/download/1586/1864
doi: 10.3989/gya.0498151

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44 Pagliero, C., Ochoa, N., Marchese, J., Mattea, M.
Degumming of crude soybean oil by ultrafiltration using polymeric membranes

(2001) *JAOCS, Journal of the American Oil Chemists' Society*, 78 (8), pp. 793-796. Cited 43 times.
http://www.aocs.org/press
doi: 10.1007/s11746-001-0344-6

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Aryanti, N.; Department of Chemical Engineering, Diponegoro University, Indonesia;
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Journal History

The initiative to start with publication of a new journal Chemical and Biochemical Engineering Quarterly (CABEQ) as a part of European Alpe-Adria initiative for regional cooperation is described. Given are the main goals for the new journal published by Croatian Association of Chemical Engineers, formation of the international editorial board, and experiences gained during 15 years of publishing. Presented are statistical data on published papers, country of origin of authors, and classification of papers into chemical and biochemical engineering fields. The experiences gained during the last two years with publishing on Internet and planned activities in future are also presented. A view on validation of journals by ISI impact factor is discussed.

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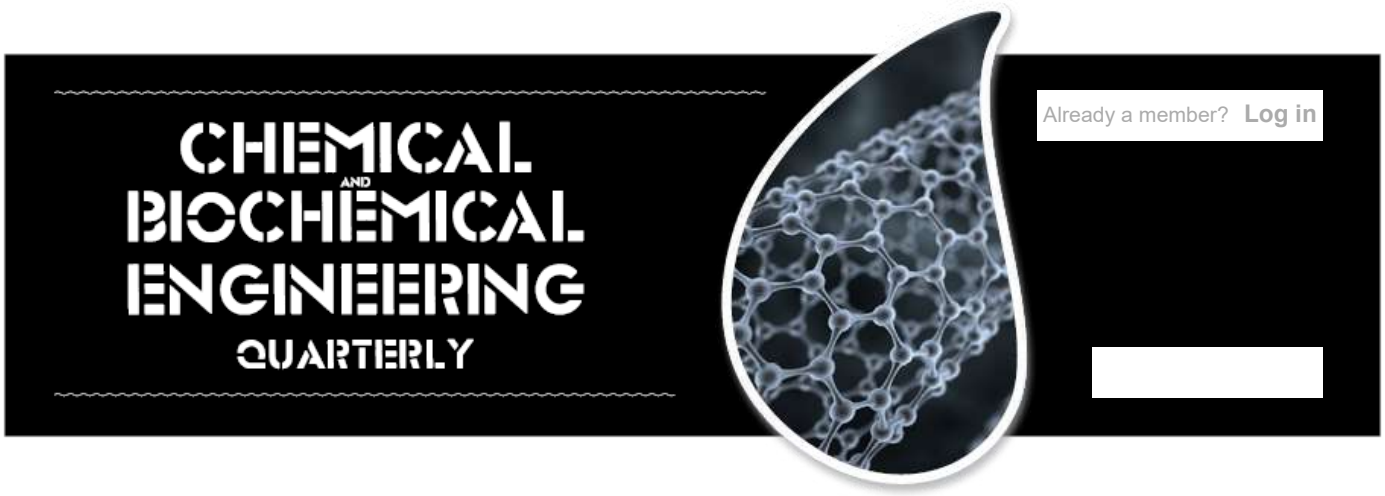

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Journal History

The initiative to start with publication of a new journal Chemical and Biochemical Engineering Quarterly (CABEQ) as a part of European Alpe-Adria initiative for regional cooperation is described. Given are the main goals for the new journal published by Croatian Association of Chemical Engineers, formation of the international editorial board, and experiences gained during 15 years of publishing. Presented are statistical data on published papers, country of origin of authors, and classification of papers into chemical and biochemical engineering fields. The experiences gained during the last two years with publishing on Internet and planned activities in future are also presented. A view on validation of journals by ISI impact factor is discussed.

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Contents

Original Scientific Paper

Intensification of the Rate of Diffusion-controlled Electrochemical and Catalytic Reactions at a Helical Coil by a Fixed Bed Turbulence Promoter

M. A. El-Naggar,[a,*] M. S. Mansour,[a] A. H. El-Shazly,[a,b] S. A. Nosier,[a] Y. A. El-Taweel,[a] and G. H. Sedahmed[a]

[a]Chemical Engineering Department, Alexandria University, Alexandria, Egypt

[b]Chemical and Petrochemicals Engineering Department, Egypt-Japan University of Science and Technology, El-Arab City, Alexandria, Egypt

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Intensifications of the rate of diffusion-controlled electrochemical and catalytic reactions taking place at the outer surface of a helical coil imbedded in an inert fixed bed of cylinders acting as turbulence promoters was studied using the electrochemical technique. The technique involved measuring the limiting current of the cathodic reduction of $K_3Fe(CN)_6$ in a large excess of NaOH as a supporting electrolyte.

The variables studied were solution velocity, packing cylinder diameter, helical coil tube diameter, and physical properties of the solution. The rate of mass transfer at the outer surface of the coil was found to increase with increasing solution velocity and decreasing packing cylinder diameter, helical coil tube diameter was found to have a little effect on the rate of mass transfer. The data were correlated with the dimensionless equation

$$Sh = 7.14 \cdot 10^{-4} Sc^{0.33} Re^{0.52} \left(\frac{d_p}{d} \right)^{-2.32}$$

Implication of the above equation for the design and operation of the present reactor was pointed out. The potential importance of using the inner surface of the coil as a built-in heat transfer facility for conducting exothermic electrochemical and catalytic reactions requiring rapid cooling was highlighted. The possibility of using multiple imbedded coaxial helical coils of different coil diameter in practical catalytic reactors to increase their rate of production was noted.

Keywords:
mass transfer, heat transfer, helical coils, fixed beds, turbulence promoters

Introduction

Recently, there has been substantial progress in the design of heterogeneous reactors (electrochemical reactors and catalytic reactors) used to conduct exothermic catalytic and electrochemical reactions, especially those involving heat-sensitive material that need rapid cooling. Previous studies dealing with such reactions have used heat exchanger/reactor, which consists of an array of vertical or horizontal tubes; the outer surface of the tubes acts as a catalyst support or electrode, while the inner surface of the tubes acts as a heat exchanger through which a coolant is passed to absorb excess heat generated on the outside surface[1–4]. Such reactors with a built-in heat transfer facility would reduce the capital costs of the process owing to the elimination of the need for an external heat exchanger. Examples of exothermic reactions that need rapid temperature control include electro-organic synthesis and immobilized cell biochemical reactions. According to Baily and Ollis[5], cells use chemical energy quite efficiently; like any real process, some of the energy in the substrate is released as heat. This metabolic heat generation dictates cooling requirements for bioreactors which harbor the cells. During electro-organic synthesis, a considerable amount of heat (Q) is generated as a result of the conversion of electrical energy used to overcome polarization at the two electrodes and ohmic drop in the solution into heat, according to the equation[6,7]

$$Q = I\left(\eta_{\text{cathode}} + \eta_{\text{anode}} + IR - \frac{T\Delta S}{zF} \right). \qquad (1)$$

This heat may adversely affect reaction selectivity and product yield besides decomposing heat-sensitive products. In case of exothermic cata-

*Corresponding author, e-mail: m.abbas.elnaggar@alexu.edu.eg

Inhibition of Copper Corrosion in NaCl Solution by Propolis Extract

V. Grudić, I. Bošković,* and A. Gezović
Faculty of Metallurgy and Technology,
University of Montenegro, Džordža Vašingtona BB,
81000 Podgorica, Podgorica, Montenegro

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This study investigates the possibility of corrosion inhibition of copper by propolis extract in 0.51 mol dm^{-3} NaCl solution. The influence of propolis extract concentration and temperature on corrosion behaviour of copper was studied using electrochemical methods. The protective effect of propolis coating deposited on the electrode surface and dried in air was also examined. The results of the study showed that with increasing propolis extract concentration in the solution there was a slight increase in open circuit copper potential to positive values, an increase in polarization resistance, and a decrease in the corrosion current density. A significantly more prominent change of all three of these parameters was observed in the case of propolis coating. Potentiodynamic measurements indicate that propolis extract acts as a mixed corrosion inhibitor, which is adsorbed on the electrode surface according to Langmuir's isotherm. The decrease in inhibition efficiency with increasing temperature indicates physical adsorption. Adsorption of propolis on the electrode surface was confirmed by the spectrophotometric method.

Keywords:
copper, propolis, corrosion, adsorption

Introduction

Because of its very good constructional properties, high electrical and thermal conductivity, and its relatively noble properties, copper is widely used in various industries. Research has shown that copper corrodes in chlorine-containing media[1–3]. The corrosive effect of aggressive components in electrolytes in practice can be reduced in many ways, but most often with the use of inhibitors. The use of environmentally harmful chemicals, including many effective corrosion inhibitors, has been reduced drastically in recent years. Therefore, many alternative natural products, eco-friendly or green corrosion inhibitors have been developed[4]. Apart from herbal extracts, honey and propolis are natural products, which can also be used as corrosion inhibitor for metals and alloys. Previous research has shown that ethanol extract of propolis significantly inhibits corrosion of steel[5–7] and copper alloys[8] in sulphate and chloride solutions.

Propolis is a resinous substance, the composition of which depends on vegetation, time, and collection area. The colour of this substance varies from yellow green to dark brown, depending on the source and age. It is accepted that propolis consists of 50 % resin, 30 % bees wax, 10 % essential and aromatic oils, 5 % pollen, and 5 % other substances, usually flavonoids[9,10]. In addition, propolis contains minerals, such as iron and zinc, and vitamins A, B1, B2, B6, C, and E. Apart from medical purposes, propolis is also used in industry. It is considered that some organic substances in propolis capable of inhibiting corrosion. Namely, flavonoids are substances with very good antioxidative properties. The following flavonoids have been found in propolis: galangin, quercetin, kempferol, apigenin, pinocembrin, and pinobanksin. All of them contain polyphenol and phenol groups (Scheme 1). Owing to such composition, the inhibition effect of propolis is based on adsorption and formation of a protective layer on the surface of the metal.

The aim of this work was to investigate the inhibition effect of propolis extract as a new and non-toxic inhibitor of copper corrosion in a 0.51 mol dm^{-3} NaCl solution. The experiments were performed by electrochemical methods and UV-VIS spectroscopy.

Experimental

Materials preparation

Cylindrical copper samples (purity 99.99 %) were soldered beforehand to insulated copper wires in order to achieve good electrical contact, and in-

*Corresponding author: Ivana Bošković, E-mail: ivabo@ac.me

Drug Mass Transfer Mechanism, Thermodynamics, and *In Vitro* Release Kinetics of Antioxidant-encapsulated Zeolite Microparticles as a Drug Carrier System

Z. Lyubenova Yaneva,[a,*] N. Valkanova Georgieva,[a] L. Lyubomirova Bekirska,[a] and S. Lavrova[b]

[a]Chemistry Unit, Department of Pharmacology, Animal Physiology and Physiological Chemistry, Faculty of Veterinary Medicine, Trakia University, Students Campus, 6000 Stara Zagora, Bulgaria

[b]Faculty of Chemical System Engineering, University of Chemical Technology and Metallurgy, 8, Kliment Ohridski Blvd., Sofia, Bulgaria

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The aim of the present study was to develop a new vitamin E-zeolite drug carrier system, and investigate the mass transfer mechanism of the antioxidant encapsulation and release on/from the mineral matrix by thermodynamic and kinetics sorption/desorption experiments and mathematical modelling of the experimental data. The surface, morphological and spectral characteristics of the vitamin and the zeolite were determined by Boehm titration, SEM, FTIR and UV/Vis spectrophotometric analyses. Intraparticle diffusion was not the only rate-limiting mechanism, as the mixed-order kinetics model gave the highest regression coefficient (R^2) and lowest SSE, MSE, RMSE, and AIC_C values. The thermodynamic study confirmed the endothermic nature of the spontaneous encapsulation process and increased degrees of randomness at the solid-liquid interface. The *in vitro* release results were best modelled by the zero-order and sigmoidal models. The results obtained are essential for the development of innovative vitamin E-carrier systems for application in human and veterinary medicine.

Keywords:
vitamin E, zeolite, drug encapsulation/release, kinetics, thermodynamics, mathematical modelling

Introduction

All tocopherols and tocotrienols are nonpolar and present mainly in the lipid phase. Vitamin E is the main dietary fat-soluble antioxidant, playing important roles in the body. It is a family of four tocopherols (α, β, γ and δ) and four corresponding tocotrienols (α, β, γ and δ), of which α-tocopherol has the highest biological activity. Vitamin E acts as a chain-breaking antioxidant preventing the propagation of free radical reactions, and thus consumption of vitamin E has been widely considered to help reduce risk of many chronic diseases, such as cardiovascular diseases.[1,2]

Besides protecting them from the harsh processing conditions and adverse storage environment, the encapsulation of bioactive compounds can also achieve targeted delivery and controlled release of entrapped nutrients to the specific site.[2]

Porous materials such as zeolites, zeolitic materials, activated carbons, silica gels, and metal oxides are of tremendous importance in many areas of research and development, mainly in adsorption, catalysis, energy storage, electrochemistry, and biomedical engineering.[3–5]

However, the performance of these materials in the adsorption of organic macromolecules is not optimal because of disordered pore structure, low specific pore volume, and significant amount of micropores, which only allows the adsorption of relatively small molecules. Among these porous materials, natural, modified and synthetic zeolites have been extensively used in various industrial adsorption and separation processes due to their ordered internal structure and the availability of mesopores.[3,6]

Adsorption of vitamin E on solid surfaces has attracted significant attention due to its importance for the pharmaceutical industry and medicinal field.[7–10] Recently, Kavalenko and Kuznetsova reported the adsorption of vitamin E on carbon-con-

*Corresponding author: Tel.: +359 898399203, E-mail: z.yaneva@abv.bg