

Article

# Application of Waste Glycerol as a Draw Solution for Forward Osmosis

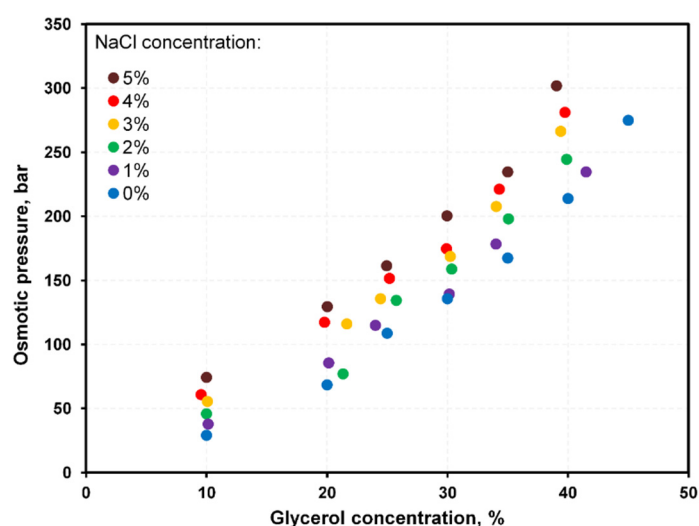
Ewa Bernacka <sup>1,\*</sup>, Hanna Jaroszek <sup>1</sup>, Marian Turek <sup>2</sup>, Piotr Dydo <sup>2</sup>, Dymitr Czechowicz <sup>2</sup> and Krzysztof Mitko <sup>2</sup>

<sup>1</sup> PolymemTech Sp. z o.o., Ul. Wołodyjowskiego 46, 02-724 Warsaw, Poland; h.jaroszek@gmail.com

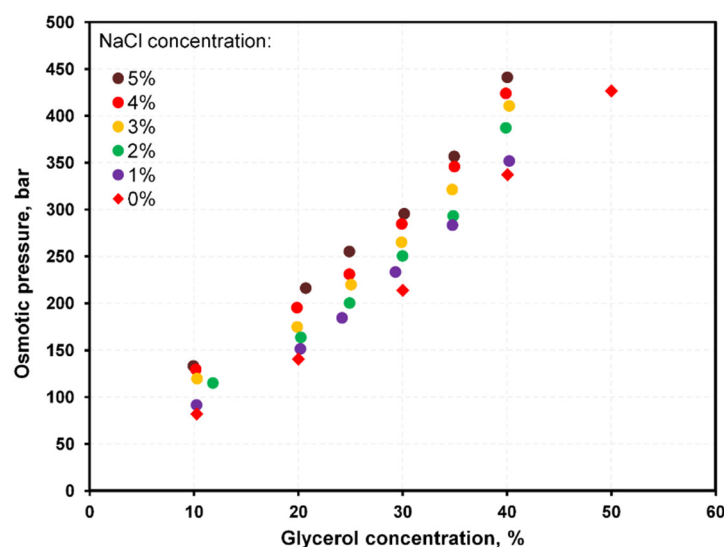
<sup>2</sup> Faculty of Chemistry, Silesian University of Technology, Ul. B. Krzywoustego 6, 44-100 Gliwice, Poland; marian.turek@polsl.pl (M.T.); piotr.dydo@polsl.pl (P.D.); dymitr.czechowicz@polsl.pl (D.C.); krzysztof.mitko@polsl.pl (K.M.)

\* Correspondence: laskowska.ewi@gmail.com

## Supplementary material



**Figure S1.** The effect of salt and glycerol concentration on osmotic pressure, calculated based on freezing point measurements, for water–glycerol–NaCl systems.



**Figure S2.** The effect of salt and glycerol concentration on osmotic pressure, calculated based on freezing point measurements, for water–glycerol–NaCl–5% methanol solutions.

**Citation:** Bernacka, E.; Jaroszek, H.; Turek, M.; Dydo, P.; Czechowicz, D.; Mitko, K. Application of Waste Glycerol as a Draw Solution for Forward Osmosis. *Membranes* **2022**, *12*, 44. <https://doi.org/10.3390/membranes12010044>

Academic Editors: Bogusław Kruczek

Received: 2 November 2021

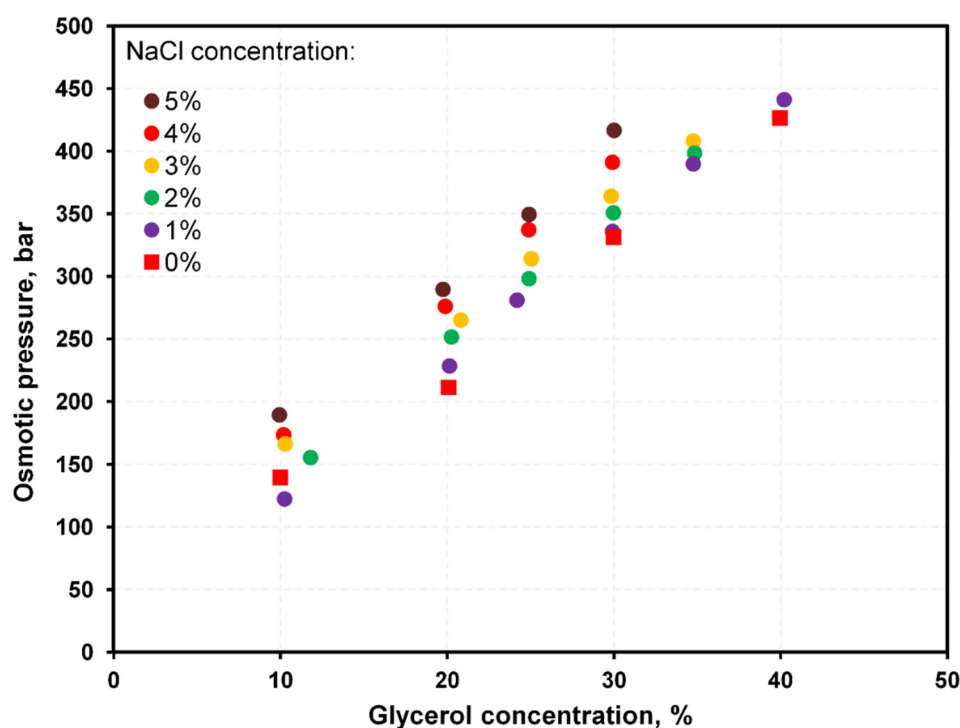
Accepted: 21 November 2021

Published: 29 November 2021

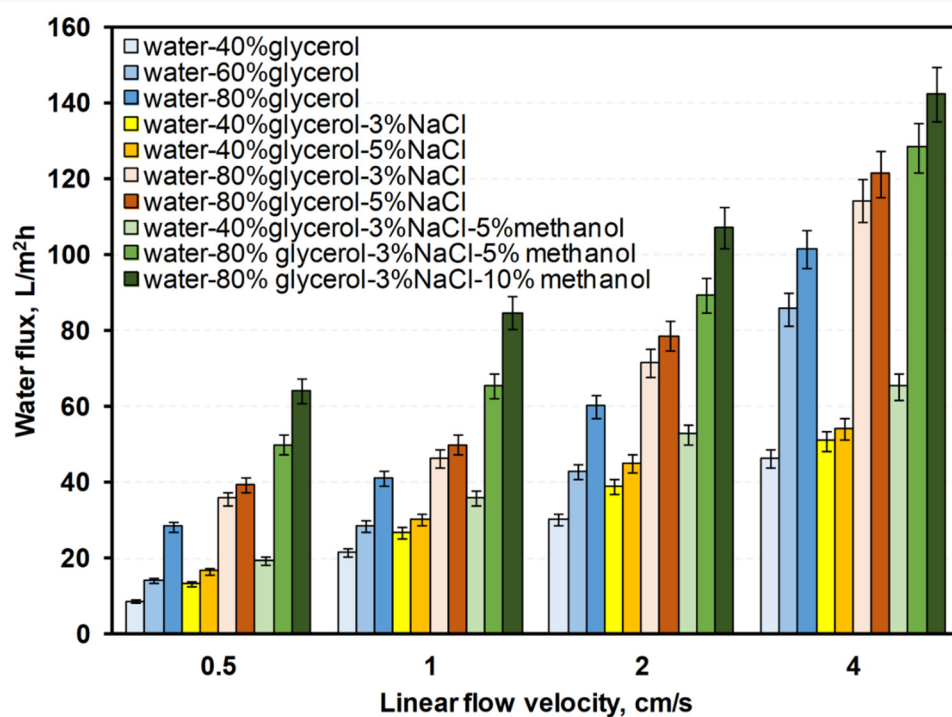
**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



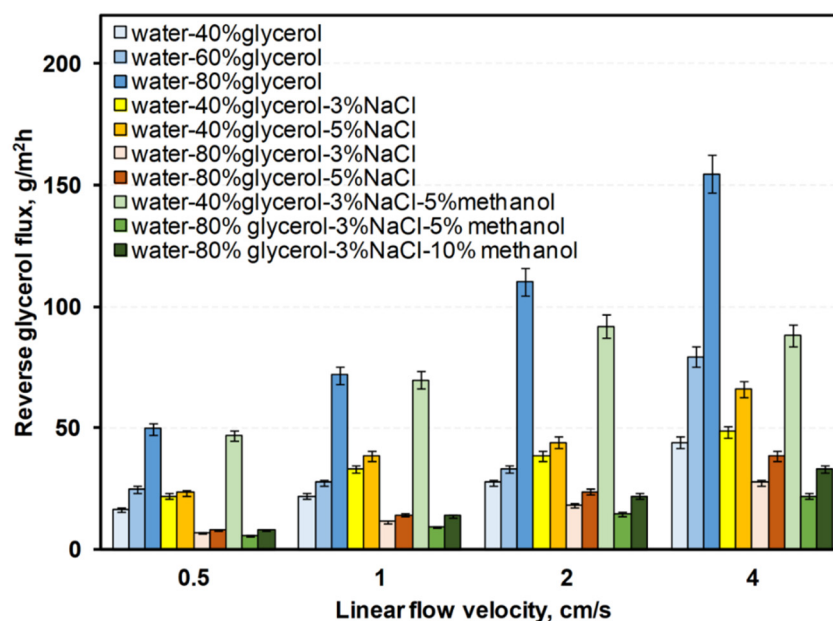
**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).



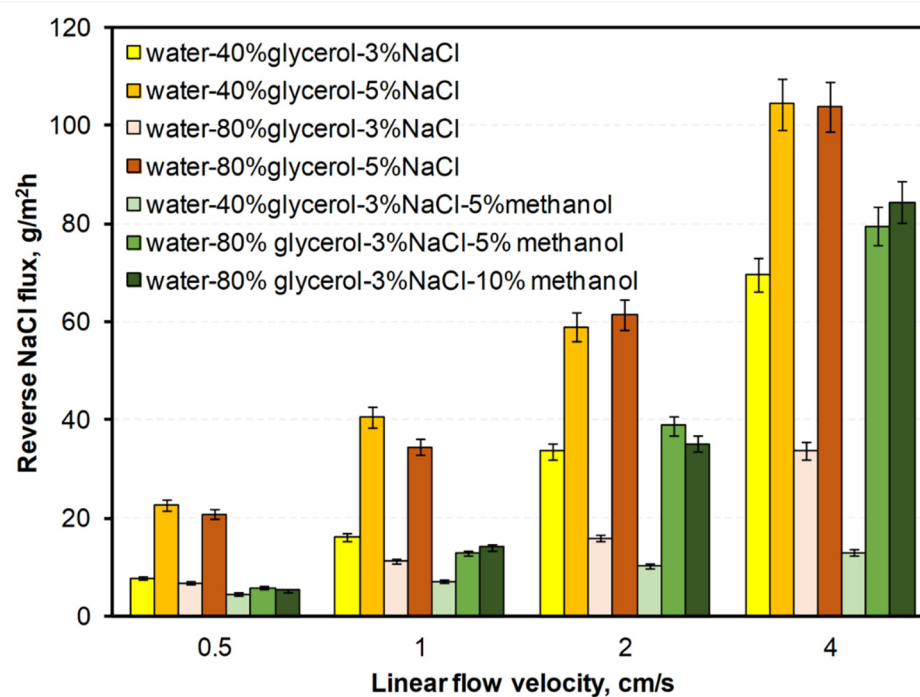
**Figure S3.** The effect of salt and glycerol concentration on osmotic pressure, calculated based on freezing point measurements, for water–glycerol–NaCl–10% methanol solutions.



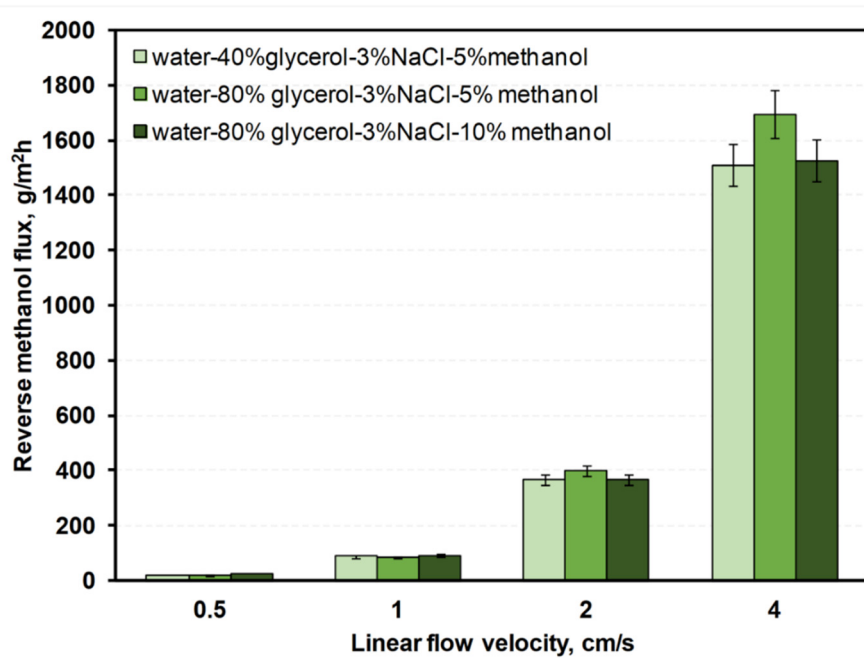
**Figure S4.** Measured water fluxes under various linear flow velocities during FO experiments in water–glycerol–NaCl–methanol systems.



**Figure S5.** Measured reverse glycerol fluxes under various linear flow velocities during FO experiments in water–glycerol–NaCl–methanol systems.



**Figure S6.** Measured reverse NaCl fluxes under various linear flow velocities during FO experiments in water–glycerol–NaCl–methanol systems.



**Figure S7.** Measured reverse methanol fluxes under various linear flow velocities during FO experiments in water–glycerol–NaCl–methanol systems.