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AIP Conference Proceedings • *Open Access* • Volume 2643 • 10 January 2023 • Article number 060016 • 8th Brunei International Conference on Engineering and Technology 2021, BICET 2021 • Bandar Seri Begawan • 8 November 2021 through 10 November 2021 • Code 185936

Document typeConference Paper • *Green Open Access***Source type**

Conference Proceedings

ISSN

0094243X

ISBN

978-073544279-5

DOI

10.1063/5.0111456

Publisher

American Institute of Physics Inc.

Sponsors

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Original language

English

Volume Editors

Ali A.M.Y., Karri R.R., Shams S., Rosli R., Rahman E.K.A., Singh R.

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Enhanced Performance of Graphene-Oxide Polyethersulfone Nanocomposite Membrane Wastewater and its Fouling Mechanism

Nik-Abdul-Ghani, Nik-Rashida^a ; Jami, Mohammed Saedi^a ; Isa, Mohamed Hasnain^b [Save all to author list](#)

^a Department of Biotechnology Engineering, Faculty of Engineering, International Islamic University Malaysia, Jalan Gombak, Kuala Lumpur, 53100, Malaysia

^b Civil Engineering Programme, Universiti Teknologi Brunei, Bandar Seri Begawan, BE1410, Brunei Darussalam

[Full text options](#) [Export](#) **Abstract**

Author keywords

Sustainable Development Goals 2023

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Abstract

Membrane fouling is still a great challenge in filtration process for wastewater treatment which limits its technical and economic performance. To prevent and control on fouling it is important to understand the filtration behaviour and fouling mechanism. In this study, a new graphene oxide-

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Study of graphene oxide-polymer nanocomposite (gpn) adsorptive membrane for lead removal from wastewater

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polyethersulfone nanocomposite (GPN) membrane is fabricated and later the performance and rejection of heavy metals removal were studied using a dead-end filtration system. The performance of the fabricated GPN membrane was measured by evaluating pure water flux and heavy metals removal. Fouling mechanisms are investigated for lead-containing wastewater using pore blocking models. According to the findings, cake filtration outperformed all other filtration mechanisms, with the highest R^2 at all transmembrane pressures applied. Furthermore, the experimental results confirmed that adding GO to the membrane enhanced pure water flux and heavy metals removal and can be applied as a novel method for preparing high performance membranes in wastewater treatment. © 2023 American Institute of Physics Inc.. All rights reserved.

Author keywords

fouling mechanism; Graphene oxide-polyethersulfone; membrane; nanocomposite; wastewater treatment

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🔍 Jami, M.S.; Department of Biotechnology Engineering, Faculty of Engineering, International Islamic University Malaysia, Jalan Gombak, Kuala Lumpur, Malaysia; email:saedi@iium.edu.my

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