

- [3] X. Li, Z. Wang, X. Han, Y. Liu, C. Wang, F. Yan, and J. Wang, "Regulating the interfacial polymerization process toward high-performance polyamide thin-film composite reverse osmosis and nanofiltration membranes: A review," *J. Membr. Sci.*, vol. 640, 119765, 2021.
- [4] X. Zhang, J. Zheng, and P. Jin *et al.*, "A PEI/TMC membrane modified with an ionic liquid with enhanced permeability and antibacterial properties for the removal of heavy metal ions," *J. Hazard. Mater.*, vol. 435, 129010, 2022.
- [5] Y. Xu, G. Peng, J. Liao, J. Shen, and C. Gao, "Preparation of molecular selective GO/DTiO₂-PDA-PEI composite nanofiltration membrane for highly pure dye separation," *J. Membr. Sci.*, vol. 601, 117727, 2020.
- [6] J. Gao, S. Sun, W. Zhu, and T. Chung, "Polyethyleneimine (PEI) cross-linked P84 nanofiltration (NF) hollow fiber membranes for Pb²⁺ removal," *J. Membr. Sci.*, vol. 452, no.15, pp. 300–310, 2014.
- [7] D. Wu, Y. Huang, S. Yu, D. Lawless, and X. Feng, "Thin film composite nanofiltration membranes assembled layer-by-layer via interfacial polymerization from polyethylenimine and trimesoyl chloride," *J. Membr. Sci.*, vol. 472, pp. 141–153, 2014.
- [8] Y. Kang, J. Jang, Y. Lee, and I. S. Kim, "Dye adsorptive thin-film composite membrane with magnetite decorated sulfonated graphene oxide for efficient dye/salt mixture separation," *Desalination*, vol. 524, 115462, 2022.
- [9] W. Vieira, M. Farias, M. Spaolozzi, M. Silva, and M. Vieira, "One-step preparation of activated pomelo peel biochar by using H₃PO₄ for removal of methylene blue: performance, isotherm, and kinetic studies," *Environ. Chem. Lett.*, vol. 18, no. 4, pp. 1113–1143, 2020.
- [10] X. Qiao, T. Chung, and K. Pramoda, "Fabrication and characterization of BTDA-TDI/MDI (P84) co-polyimide membranes for the pervaporation dehydration of isopropanol," *J. Membr. Sci.*, vol. 264, pp. 176–189, 2005.
- [11] C. Ba, J. Langer, and J. Economy, "Chemical modification of P84 copolyimide membranes by polyethylenimine for nanofiltration," *J. Membr. Sci.*, vol. 327, pp. 49–58, 2009.
- [12] D. Oatley-Radcliffe, M. Walters, T. Ainscough, P. Williams, A. Mohammad, and N. Hilal, "Nanofiltration membranes and processes: A review of research trends over the past decade," *J. Water Process. Eng.*, vol. 19, p. 64, 2017.
- [13] P. Singh, P. Ray, Z. Xie, and M. Hoang, "Synchrotron SAXS to probe cross-linked network of polyamide 'reverse osmosis' and 'nanofiltration' membranes," *J. Membr. Sci.* vol. 421, pp. 51–59, 2012.
- [14] T. Liu, X. Liu, N. Graham, W. Yu, and K. Sun, "Two-dimensional MXene incorporated graphene oxide composite membrane with enhanced water purification performance," *J. Membr. Sci.* vol. 593, 117431, 2020.
- [15] M. Shao, Y. Li, L. Meng, J. Guo, Y. Gao, Y. Liu, and M. Huang, "Simultaneous removal of antimony, chromium and aniline by forward osmosis membrane: Preparation, performance and mechanism," *Desalination*, vol. 520, 115363, 2021.
- [16] T. Mastropietro, R. Bruno, E. Pardo, and D. Armentano, "Reverse osmosis and nanofiltration membranes for highly efficient PFASs removal: overview, challenges and future perspectives," *Dalton Trans.* vol. 50, pp. 5398–5410, 2021.
- [17] F. Aouaini, L. Sellaoui, M. Alanazi, G. Dotto, W. Alfwzan, H. Al-Yousef, and A. Erto, "Theoretical analysis of the removal mechanism of Crystal Violet and Acid Red 97 dyes on Agaricus bisporus residue," *J. Mol. Liq.*, vol. 343, 117621, 2021.
- [18] M. Rahman, A. Ali, and M. Rahman *et al.*, "Investigation of aggregation behavior of ionic surfactant mixture in crystal violet dye solution at different temperatures and solvent compositions: Conductivity and theoretical approach," *J. Mol. Liq.*, vol. 338, 116402, 2021.
- [19] H. Lueck, B. Rice, and J. McHale, "Aggregation of triphenylmethane dyes in aqueous solution: Dimerization and trimerization of crystal violet and ethyl violet," *Spectrochim. Acta A Mol. Biomol. Spectrosc.*, vol. 48, no. 6, pp. 819–828, 1992.

Copyright © 2024 by the authors. This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited ([CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)).