# Article information:

Performance, limitation, and opportunities of acid-resistant nanofiltration membranes for industrial wastewater treatment - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0376738822008870>

# Article summary:

1. Acidic wastewaters from industrial processes pose a significant environmental concern due to their large volume and limited disposal options.

2. Conventional thin-film composite NF membranes degrade under acid exposures, limiting their applications in industrial wastewater treatment.

3. Development of chemically robust NF membranes that are stable during operation with highly acidic feed streams has been a subject of active research and industrial interest.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article "Performance, limitation, and opportunities of acid-resistant nanofiltration membranes for industrial wastewater treatment" provides a comprehensive overview of the challenges associated with treating acidic wastewaters generated by various industrial processes. The authors highlight the limitations of conventional water treatment options and explore the potential of membrane-based technologies, specifically nanofiltration (NF) and reverse osmosis (RO), for treating these wastewaters.

The article provides a detailed analysis of the performance and stability of commercial NF/RO membranes under acidic conditions. The authors discuss the fundamental mechanisms responsible for the degradation of semi-aromatic polyamide networks by acid-catalyzed hydrolysis, which limits their applications in industrial wastewater treatment. They also describe various technical strategies to fabricate acid-resistant NF membranes, focusing on enhancing their acid stability.

Overall, the article is well-researched and provides valuable insights into the challenges associated with treating acidic wastewaters. However, there are some potential biases and limitations that should be considered.

One potential bias is that the article focuses primarily on membrane-based technologies as a solution for treating acidic wastewaters. While these technologies have many advantages over conventional methods, they also have some limitations that are not fully explored in the article. For example, membrane fouling can be a significant problem in industrial applications, reducing membrane performance and increasing operating costs.

Another limitation is that the article does not provide a comprehensive analysis of all possible technical solutions for treating acidic wastewaters. For example, electrochemical separation techniques such as capacitive deionization and electrodialysis are mentioned briefly but not fully explored.

Additionally, while the article provides a detailed analysis of commercial NF/RO membranes' limitations under acidic conditions, it does not provide sufficient evidence to support claims about alternative membrane materials' superior performance or stability. More research is needed to fully evaluate these materials' potential for industrial wastewater treatment.

In conclusion, while this article provides valuable insights into the challenges associated with treating acidic wastewaters using membrane-based technologies, it has some potential biases and limitations that should be considered when evaluating its conclusions. Further research is needed to fully evaluate all possible technical solutions for treating these challenging waste streams.

# Topics for further research:

* Capacitive deionization for industrial wastewater treatment
* Electrodialysis for acidic wastewater treatment
* Membrane fouling in industrial applications
* Alternative membrane materials for acidic wastewater treatment
* Acid-resistant coatings for NF/RO membranes
* Acidic wastewater treatment using biological methods

# Report location:

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