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Type: **Poster Presentation**

# Polymeric Membranes' Morphology and Water Flow Simulation

Thursday, 2 June 2022 10:10 (1h 10m)

The membrane morphology significantly influences membrane performance. For osmotically driven membrane processes, the morphology strongly affects the internal concentration polarization. In this work, different membrane morphologies were generated by simulation and their influence on membrane performance was studied. The simulation results were experimentally validated for two classical phase-inversion membrane morphologies: sponge- and finger-like structures. Membrane porosity and scanning electron microscopy image information were used as model input. The permeance results from the simulation fit well those experimentally measured. Water permeances were predicted for different kinds of finger-like cavity membranes with different finger-like cavity lengths and various finger-like cavity sets, as well as for membranes with cylindrical cavities using 3-D simulation. The results provide a much more realistic representation of the system, than just considering a simple porosity estimation. The method was confirmed as a validated tool to predict how different morphologies would affect the accurate water permeance and is being now explored to facilitate further modeling solute transfer as a valuable help to estimate the performance in osmotically driven membrane processes.

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## Country

China

## References

## Time Block Preference

Time Block A (09:00-12:00 CET)

## Participation

Online

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