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Porous membrane cleaning using supercritical carbon dioxide. Part 1: Experimental investigation and analysis of transport properties

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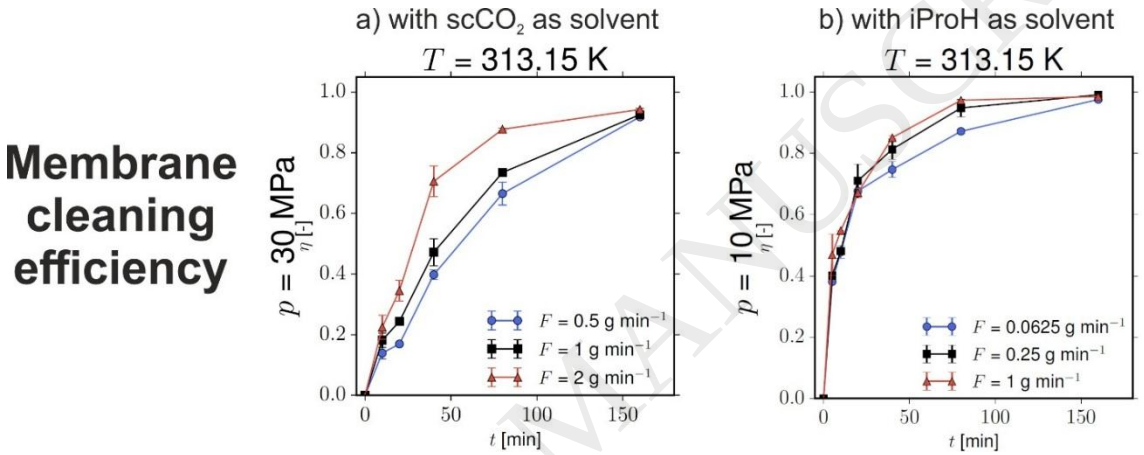
Graphical Abstract



Highlights

- Porous membrane cleaning using $scCO_2$ was investigated experimentally
- Standard cleaning method utilizing liquid isopropyl alcohol was used as reference
- Effect of pressure, temperature, solvent flow, and process time was investigated
- Supercritical carbon dioxide is an efficient cleaning fluid
- Cleaning using $scCO_2$ is slower than cleaning using isopropyl alcohol

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Abstract

The process of porous membrane cleaning using supercritical carbon dioxide was investigated experimentally in order to assess the potential of replacing liquid organic solvents used in standard membrane cleaning techniques. Cleaning microfiltration membranes contaminated with soybean oil was considered, and a reference process with liquid propan-2-ol as solvent was analyzed. The effect of process parameters (temperature, pressure, process time, solvent flow rate, solvent type) on the course of the