



## Organic Solvent Nanofiltration Reporting Checklist

Checklist for articles focusing on membrane development:  
*Membrane fabrication*

OSN analysis and reporting checklist 1/3

### Fabrication of TFC membranes

- Concentration of monomer solutions
- Volume of solvents used per area of fabricated membrane
- Reaction conditions (temperature, agitation, additives)
- Degree of reaction, modification (or justification of why it cannot be determined)

### Fabrication of ISA membranes

- Mass of dope solution
- Concentration of dope solution
- Conditions of dope solution preparation (temperature)
- Casting conditions (temperature, humidity, casting speed, film thickness)
- Volume of coagulation bath per area of fabricated membrane

### Crosslinking of membranes

- Concentration of crosslinker solutions
- Volume of solvents used per area of fabricated membrane
- Reaction conditions (temperature, agitation)
- Degree of crosslinking (or justification of why it cannot be determined)

### Coating of membranes

- Concentration of coating solution
- Volume of solvents used per area of fabricated membrane
- Conditions (temperature, agitation, additives)
- Degree of crosslinking (or justification of why it cannot be determined)

### Other chemical modification of membranes

- Concentration of reactants
- Volume of solvents used per area of fabricated membrane
- Reaction conditions (temperature, agitation, additives)
- Degree of modification (or justification of why it cannot be determined)

### Annealing

- Conditions (temperature, agitation, time)

### Solvent treatment

- Volume of solvents used per area of fabricated membrane (in case of wet annealing)
- Conditions (temperature, agitation, time)

### Membrane conditioning with pore-preserving agents PEG or glycerol)

- Volume of treatment solution used per area of fabricated membrane
- Composition of treatment solution used
- Conditions (temperature, agitation, time)





# Organic Solvent Nanofiltration Reporting Checklist

Checklist for articles focusing on membrane development:  
*Process characterization*

## Reporting experimental protocol

<b>Dissolution tests</b>	<input type="checkbox"/> visual or <input type="checkbox"/> quantitative) in <input type="checkbox"/> methanol, <input type="checkbox"/> ethanol, <input type="checkbox"/> acetone, <input type="checkbox"/> ethyl acetate, <input type="checkbox"/> <i>n</i> -heptane, <input type="checkbox"/> DMF, <input type="checkbox"/> DMSO, <input type="checkbox"/> acetonitrile, <input type="checkbox"/> 2-methyl tetrahydrofuran, <input type="checkbox"/> toluene
<b>Applied pressure of</b>	<input type="checkbox"/> 10 bar, <input type="checkbox"/> 20 bar, <input type="checkbox"/> 30 bar, <input type="checkbox"/> 40 bar
<b>Process temperature of</b>	<input type="checkbox"/> 20 °C, <input type="checkbox"/> 40 °C, <input type="checkbox"/> 60 °C, <input type="checkbox"/> 80 °C
<b>Agitation</b>	<input type="checkbox"/> 100 L h <sup>-1</sup> for cross-flow, <input type="checkbox"/> 500 rpm for dead-end
<b>Process solvents</b>	<input type="checkbox"/> ethanol, <input type="checkbox"/> acetone, <input type="checkbox"/> ethyl acetate, <input type="checkbox"/> <i>n</i> -heptane, <input type="checkbox"/> methanol, <input type="checkbox"/> isopropanol, <input type="checkbox"/> methyl ethyl ketone, <input type="checkbox"/> DMF, <input type="checkbox"/> DMSO, <input type="checkbox"/> acetonitrile, <input type="checkbox"/> 2-methyl tetrahydrofuran, <input type="checkbox"/> toluene, <input type="checkbox"/> <i>p</i> -cymene, <input type="checkbox"/> <i>p</i> -xylene
<b>Solutes</b>	<input type="checkbox"/> styrene oligomers, <input type="checkbox"/> lecithin, <input type="checkbox"/> pharmaceutical, <input type="checkbox"/> catalysts
<b>Concentration</b>	<input type="checkbox"/> 1 g L <sup>-1</sup> , <input type="checkbox"/> above 1 g L <sup>-1</sup>
<b>Membrane replicates</b>	<input type="checkbox"/> 3 <input type="checkbox"/> more than 3

## Checklist for reporting experimental protocol

- Each membrane–solvent–solute system
- Pressure
- Process temperature
- Solute concentration
- Membrane area
- Membrane conditioning time and conditions
- Filtration time
- Configuration type (cross-flow, dead-end, vacuum, etc.)
- Agitation: Cross-flow velocity or stirring speed
- Feed flow rate
- System volume
- Process type (continuous/batch)
- Number of replicates
- Origin of standard deviation (parallel experiment or individual measurements, from same membrane sheet or from different dope solution)
- Any pre-treatment of membrane
- Any interruption of filtration

## Reporting performance characteristics

- Permeance or flux of pure solvents
- Permeance or flux of solution
- Rejection of all the solutes
- Flux decline during the compaction period
- Standard deviation from membrane replicates
- MWCO at least in one solvent using a homologue series





# Organic Solvent Nanofiltration Reporting Checklist

Checklist for articles focusing on case studies (process):  
*Process characterization*

## Initial search

- Membrane screening with at least 3 replicates under conditions relevant to case study

## Determination of optimal operating conditions (if not specified in the case study)

Applied pressure of	<input type="checkbox"/> 10 bar, <input type="checkbox"/> 20 bar, <input type="checkbox"/> 30 bar, <input type="checkbox"/> 40 bar
Process temperature of	<input type="checkbox"/> 20 °C, <input type="checkbox"/> 40 °C, <input type="checkbox"/> 60 °C, <input type="checkbox"/> 80 °C
Agitation	<input type="checkbox"/> 100 L h <sup>-1</sup> for cross-flow, <input type="checkbox"/> 500 rpm for dead-end

## Reporting experimental protocol

- Membrane–solvent–solute system
- Pressure
- Process temperature
- Solute concentration
- Membrane area
- Filtration time
- Configuration type (cross-flow or dead-end)
- Agitation: Cross-flow velocity or stirring speed
- Feed flow rate
- System volume
- Process type (continuous/batch)
- Membrane conditioning time and conditions
- Number of repeat experiment with new membrane
- Any interruption of filtration

## Reporting performance characteristics

- Permeance or flux of solution
- Rejection of all the solutes
- Standard deviation from repeat experiments or overlay the results from repeat experiments if samples were taken at different time interval

