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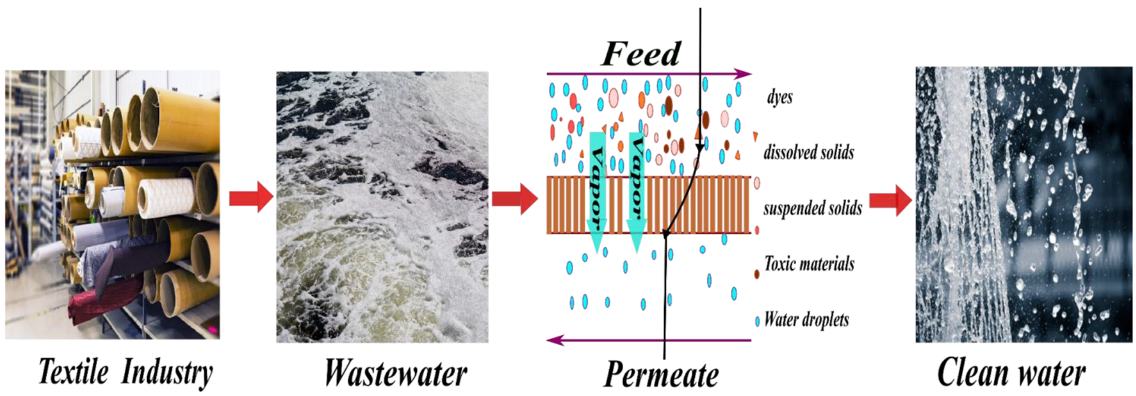
Graphical Abstract



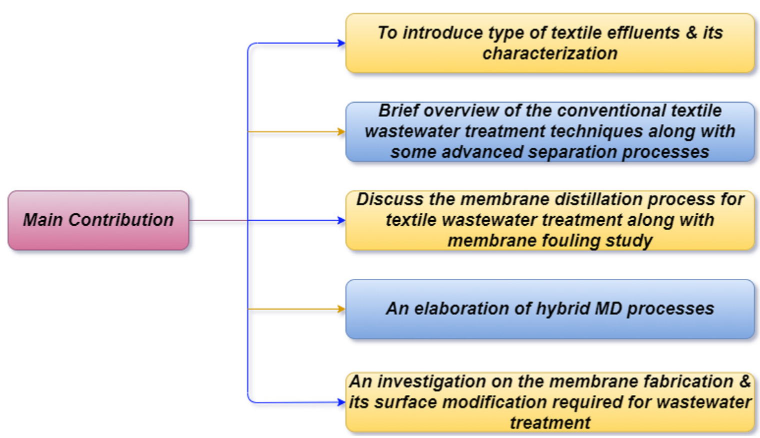


Fig. S1. Main contributions of the current review paper.

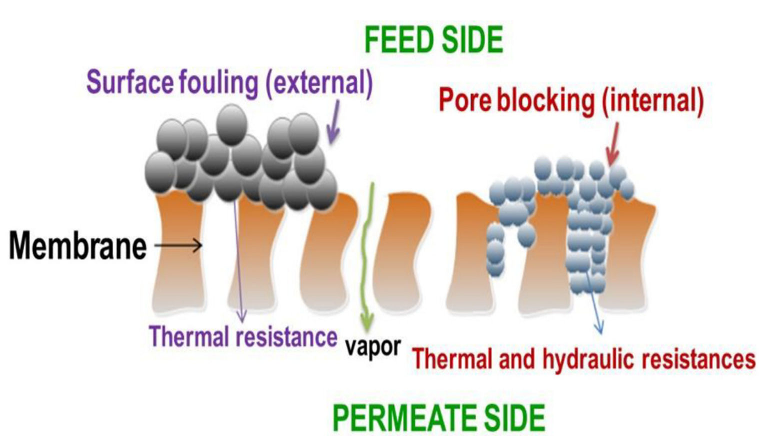


Fig. S2. Fouling mechanism in MD. (Reproduced from Tijing et al. [1] with permission from Elsevier)

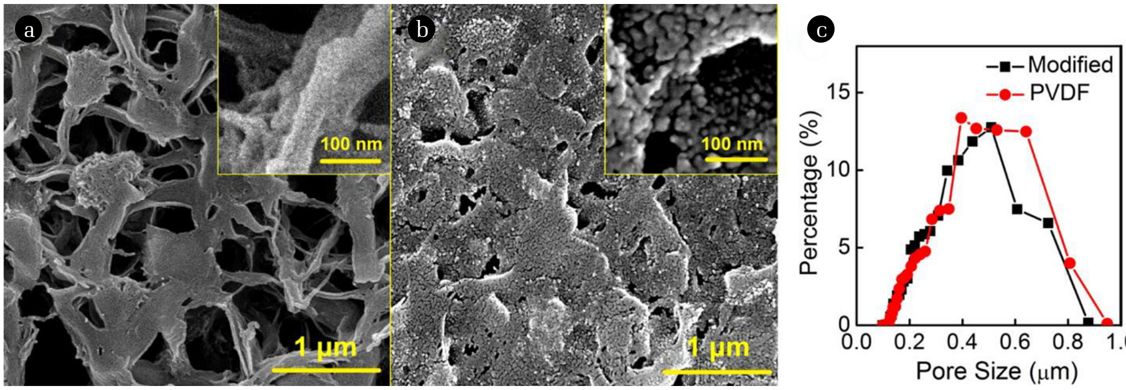


Fig. S3. SEM image of new PVDF membrane (a), modified PVDF membrane with coating of CTS-PFO/SiNPs nanocomposite layer (b) with pore size distribution (c). Reprinted (adapted) with permission from Wang et al. [2]. Copyright (2016) American Chemical Society.

Table S1. Summary of Review Papers for Wastewater Treatment Using MD

Aspect	Main Contribution	Ref.
Membrane Fabrication for different types of wastewater treatment	This paper provides a critical review on the membrane fabrication and membrane modification along with MD application of wastewater treatment	[3]
Textile effluent treatment using different membrane separation techniques	A critical overview of the membrane-based separation, mainly ultrafiltration, nanofiltration, microfiltration, reverse osmosis, and electrodialysis provided.	[4]
Textile wastewater treatment using membrane bioreactor	A thorough review on textile wastewater treatment using MBR and various other membrane separation processes like UF, NF & MD coupled with MBR.	[5]
Polymeric nanocomposite membrane preparation for wastewater treatment	A detailed review about the preparation of polymeric nanocomposite membranes and their applications in the wastewater treatment	[6]
Industrial wastewater treatment using various treatment techniques	An exhaustive survey about sources of industrial wastewater and various physical, chemical, and biological treatment techniques to remove colorants present in the wastewater	[7]
Wastewater treatment using membrane bioreactor integrated with other separation processes	A wide survey on the wastewater treatment using membrane bioreactor coupled with RO, FO and AOP's.	[8]
Textile wastewater treatment using different separation techniques	A critical review for textile wastewater treatment using various treatment techniques and an overview of textile industry operations.	[9]
Textile effluents characterization & treatment	An in-depth review on textile industry including production, characterization and treatment of textile effluents using various treatment techniques including AOP's.	[10]
Wastewater treatment using MD	A state-of-the-art review on wastewater treatment using different types of membrane distillation (DCMD, AGMD, VMD & SGMD) and its applications.	
Dye wastewater treatment using membrane driven separation processes	A critical review focussing on dye wastewater treatment using different membrane-driven separation processes like MF, UF, MBR, RO and other hybrid separation processes and also focusses on fouling.	

Table S2. Advantages and Disadvantages of Advanced Oxidation Processes

Process	Advantages	Disadvantages	Ref.
Ozonation	a. High oxidation potential	a. Quality of water obtained will be low b. High capital cost	[13]
Electrochemical Process	a. Low energy requirements b. Effectively recover metals from wastewater	a. High maintenance cost	[14]
Ozone/H_2O_2	a. More efficient than ozonation	a. High capital cost	[12]
Fenton process	a. Low maintenance b. Easy to operate	a. Sludge formation b. High acidic environment	[14]
Ozone/ H_2O_2/UV	a. Complete decolorization of dye b. No sludge formation	a. High capital cost	[12]
Photo-Fenton process	a. Process kinetics is enhanced due to photolysis	a. Sludge formation b. Additional cost due to photolysis	[15]

Table S3. Effect of Operating Parameters on the Performance of Membrane Distillation

Operating Parameter	Effect on Permeate Flux and Rejection	Optimum Condition	Ref.
Feed temperature	By increasing feed temperature, the driving force across the membrane increases. As a result, permeate flux and rejection increase.	60℃	[16, 17]
Feed flow rate	An increase in feed flow rate increases permeates flux since a high flow rate decreases the thermal boundary layer present on the membrane surface thereby, reducing temperature polarization.	350 mL/min	[18]
Concentration of textile effluents	On increasing concentration, chances of fouling increase; as a result, permeate flux reduces over the duration of time	20 mg/L	[19]
Permeate temperature	Permeate temperature decreases the driving force across the membrane, which reduces permeate flux and rejection	20℃	[18]

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