Advances in nanofiber membrane

ABSTRACT

Nanofiber membranes have become a significant tool in separation processes due to their intrinsic properties of highly porous structure, narrow pore size and pore size distribution compared to conventional cast membranes. In this short review, the application of nanofiber membrane in desalination and air filtration is reviewed. Electrospinning is introduced as one of the efficient methods to produce nanofiber membrane with excellent properties, but this method is less suitable for mass production of nanofiber as it can only produce low throughput. Meltblown nanofiber is currently produced commercially on a large scale, but it has a limitation of larger fiber diameter, larger membrane pore size and distribution, and lower filtration efficiency than electrospun nanofibers. Nonetheless, there are many areas for improvement in meltblowing process which can be explored to improve the quality of meltblown nanofiber membranes