

20th NARECOM – NAnoEnviCz REsearch COmmunity Meeting

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**Nanofibrous materials in wastewater treatment**

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**Abstract:**

Electrospun nanofibers exhibit great potential in membrane technology due to their high surface area, high porosity, tight pore size, high pore interconnectivity, and high permeability for gases and liquids. Although nanofiber webs show excellent properties, their poor mechanical performance limits their application in liquid filtration. Improving the mechanical properties of nanofiber webs would be of great value in promoting their industrial applications. This work explores the viability of developing hybrid nanofiber membranes for liquid separation and demonstrates its cleaning process after fouling. First, a preparation method for nanofiber webs on an industrial scale will be introduced. Second, a powerful yet economical technique for developing the mechanical strength of the nanofiber web to form a membrane will be described. That will be followed by the application of nanofibrous membranes in micro-and nanofiltration. Finally, surface modification and the chemical cleaning process of a selected membrane after the separation of oily wastewater will be demonstrated. A systematic description presented in this work will help to introduce nanofiber webs into membrane technology for various wastewater applications.

