**Separation of oil/water emulsions using nano MgO anchored hybrid ultrafiltration membranes for environmental abatement**

Thanigaivelan Arumugham,1 Noel Jacob Kaleekkal,1 Dipak Rana,2 Mohan Doraiswamy1

**1Membrane Laboratory, Department of Chemical Engineering, Anna University, Chennai 600025, India**

**2Department of Chemical and Biological Engineering, Industrial Membrane Research Institute, University of Ottawa, 161 Louis Pasteur St., Ottawa, Ontario, Canada K1N 6N5**

**Correspondence to: D. Mohan (E - mail: mohantarun@gmail.com)**

**ABSTRACT**

This work focuses on utilizing the dual role of sulfonated polyphenyl sulfone (SPPSU) as both an anchoring agent and an interlayer modifying agent in the preparation of nano MgO/SPPSU/PPSU membranes for oil removal from water. These asymmetric membranes were prepared using the phase inversion technique. The dispersed nano MgO was observed in the membrane matrix as seen by scanning electron microscope and energy dispersive X-ray analysis. The reduction in contact angle value establishes the increases in hydrophilicity. An increase in SPPSU (wt %) loosens the nano MgO/SPPSU/PPSU membrane packing as exhibited by the increase of *d*-spacing by X-ray diffraction analysis. The antifouling properties were tested using humic acid, as a model foulant. Further, in castor oil/water emulsion separation, it was found that the membrane with 25 wt % anchored moiety SPPSU/nano MgO produced a greater flux recovery ratio of 94.9% (60.3) without compromising the oil rejection of 99% (60.4) and better oleophobic surfaces for oil.

**Keywords**: Ultrafiltration Membrane, Phase Inversion techniques, Nanocomposite, oleophobic

**References:**

1. Chen, W.; Peng, J.; Su, Y.; Zheng, L.; Wang, L.; Jiang, Z. *Sep. Purif. Technol.* 2009, *66*, 591.

**Note:**

1. Title : TimesNewRoman 14
2. Author name & address: Times New Roman 12 & 10
3. Abstract : Times New Roman 12 (Line Spacing 1.5)
4. Keywords: Times New Roman 10
5. References: Times New Roman 12