**New and Dynamic methods for the preparation and performance of Polymeric Nanofiltration Membrane Materials used in Waste Water Treatment**

Oluranti Agboola1 Touhami Mokrani1 and Emmanuel Rotimi Sadiku2

1Department of Civil and Chemical Engineering, University of South Africa, Johannesburg, South Africa

2Department of Chemical, Metallurgical and Materials Engineering, Faculty of Engineering and the Built Environment, Tshwane University of Technology, Pretoria 0001, South Africa

Email: [funmi2406@gmail.com](mailto:funmi2406@gmail.com)

**Abstract**

A pressure-driven membrane process, such as nanofiltration (NF) has become the main component of advanced water reuse and desalination systems throughout the world. Although NF is generally targeted to remove only divalent ions and large ions, it functions similarly, to reverse osmosis. Nanofiltration membrane technology used in large scale, depends strongly on the membrane materials, membrane production conditions and its process. The progress at nanometer scale in science and engineering, has suggested that many current problems involving water quality could be significantly improved or resolved by using nanomaterials, such as carbon nanotubes and nanoparticles. Here, we review some recent investigations on polymer blends for the preparation of nanofiltration membranes and the new and dynamic techniques for the preparation of nanofiltration membranes, using nanotechnology. The development of high performance and innovative nanofiltration membrane processes is crucial for a sustainable industrial and domestic growth. This contribution also highlights the development of innovative materials with improved properties. Recent investigations on the performance evaluation of solvent resistant nanofiltration (SRNF) for different applications are also reviewed.

**Keywords** Polymer, Nanofiltration membranes, Waste water, Fouling resistance, Carbon nanotubes, nanoparticles