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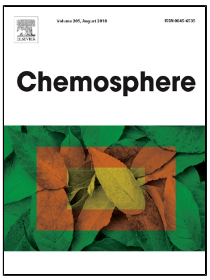

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Nur Hamizah Mohtor, Mohd Hafiz Dzarfan Othman, Suriani Abu Bakar, Tonni Agustiono Kurniawan, Hazlini Dzinun, Muhammad Noorul Anam Mohd Norrdin, Zanariah Rajis

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Synthesis of Nanostructured Titanium Dioxide Layer onto Kaolin Hollow Fibre Membrane via Hydrothermal Method for Decolourisation of Reactive Black 5

Nur Hamizah Mohtor[a], Mohd Hafiz Dzarfan Othman[a,*], Suriani Abu Bakar[b], Tonni Agustiono Kurniawan[c], Hazlini Dzinun[a], Muhammad Noorul Anam Mohd Norrdin[a], Zanariah Rajis[a]

[a]Advanced Membrane Technology Research Centre (AMTEC), Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia

[b]Nanotechnology Research Centre, Department of Physics, Faculty of Science and Mathematics, Universiti Pendidikan Sultan Idris, 35900 Tanjung Malim, Perak, Malaysia

[c]Key Laboratory of the Ministry of Education for Coastal and Wetland Ecosystems, College of Ecology and the Environment, Xiamen University, Xiamen 361102 Fujian, PR China

*Corresponding author. Tel.: +60 75536373; E-mail address: hafiz@petroleum.utm.my

ABSTRACT

Hydrothermal method has been proven to be an effective method to synthesise the nanostructured titanium dioxide (TiO_2) with good morphology and uniform distribution at low temperature. Despite of employing well-known and commonly used glass substrate as the support to hydrothermally synthesise the nanostructured TiO_2, this study emphasised on the application of kaolin hollow fibre membrane as the support for the fabrication of kaolin/TiO_2 nanorods (TNR) membrane. By varying the hydrothermal reaction times (2 h, 6 h, and 10 h), the different morphology, distribution, and properties of TiO_2 nanorods on kaolin support were observed by field emission scanning electron microscopy (FESEM), energy-dispersive X-ray spectroscopy (EDX), atomic force microscope (AFM), X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR). The well-dispersed of TiO_2 nanorods have improved the surface affinity of kaolin/TNR membrane towards water, allowing kaolin/TNR membrane