

## عنوان مقاله:

Performance Evaluation of Hybrid Coagulation/Nanofiltration Process for AT-POME Treatment

## محل انتشار:

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## نویسندگان:

Woei Jye Lau - *Advanced Membrane Technology Research Centre, Universiti Teknologi Malaysia*

Tipparat Nooruan - *Rubber Industry Technology, Prince of Songkla University*

Wan Nur Ain Shuhada Abdullah - *Advanced Membrane Technology Research Centre, Universiti Teknologi Malaysia*

Farhana Aziz - *Advanced Membrane Technology Research Centre, Universiti Teknologi Malaysia*

## خلاصه مقاله:

The presence of lignin and its degraded products such as tannin and humic acids is the main reason causing the aerobically-treated palm oil mill effluent (AT-POME) to display colour at the point of discharge. In this work, a hybrid method is developed to treat the AT-POME sample that was conventionally treated by biological method. This hybrid method combines coagulation and nanofiltration (NF) membrane process is used to treat the industrial effluent in which the coagulation is conducted prior to NF process. The effects of several variables during coagulation process, i.e., alum concentration, decolouring polymer dosage, cationic polymer dosage and pH on the colour removal and sludge volume production are investigated using response surface methodology (RSM). Optimum variable conditions are chosen to prepare samples with maximum colour rejection and minimum sludge volume for further treatment using the NF membrane process. Under the optimum coagulation conditions (50 mg/L alum, 441 mg/L decolouring polymer, 534 mg/L cationic polymer and pH 9.2), the results showed 92% colour removal with sludge volume as low as 4.1 mL. Further treatment using commercial NF membranes indicated that a permeate sample with complete .elimination of colour (almost 100% colour removal) could be produced with reasonably high water flux

## کلمات کلیدی:

Coagulation, Nanofiltration, Hybrid method, AT, Pome

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