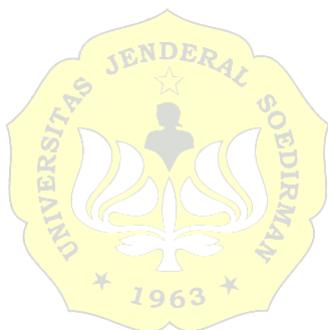


## ABSTRAK

Membran komposit SA-SiO<sub>2</sub> telah berhasil disintesis. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan SiO<sub>2</sub> terhadap karakteristik membran dan kinerjanya untuk menurunkan kadar fosfat pada limbah cair *laundry*. Membran yang sudah dibuat lalu dikarakterisasi uji fluks, uji rejeksi, uji kuat tarik, FTIR, dan SEM. Hasil penelitian menunjukkan bahwa semakin tinggi konsentrasi SiO<sub>2</sub> yang ditambahkan, maka semakin besar nilai fluks dan rejeksi yang diperoleh. Uji kuat tarik yang dinyatakan dengan *modulus Young* tertinggi pada variasi membran SA-SiO<sub>2</sub> 6% sebesar 27,53 N/m<sup>2</sup>. Hasil uji SEM menyatakan bahwa penambahan SiO<sub>2</sub> mempengaruhi ukuran dan jumlah pori membran. Persentase penurunan kadar fosfat pada limbah cair *laundry* setelah filtrasi dengan membran SA-SiO<sub>2</sub> 0, 3, dan 6% sebesar 12,42; 22,58; dan 30,44%.

**Kata kunci:** fosfat, limbah cair *laundry*, membran, SiO<sub>2</sub>



## **ABSTRACT**

*SA-SiO<sub>2</sub> composite membrane has been successfully synthesized. This research aims to determine the effect of adding SiO<sub>2</sub> on membrane characteristics and its performance to reduce phosphate levels in liquid laundry waste. The membrane that has been made is then characterized by flux test, rejection test, tensile strength test, FTIR, and SEM. The research results show that the higher the SiO<sub>2</sub> concentration added, the greater the flux and rejection values obtained. The tensile strength test expressed by the highest Young's modulus on the 6% SA-SiO<sub>2</sub> membrane variation was 27.53 N/m<sup>2</sup>. SEM test results show that the addition of SiO<sub>2</sub> affects the size and number of membrane pores. The percentage reduction in phosphate levels in liquid laundry waste after filtration with 0, 3 and 6% SA-SiO<sub>2</sub> membranes was 12.42; 22.58; and 30.44%.*

**Keywords:** laundry liquid waste, membrane, phosphate, SiO<sub>2</sub>

