SINTESIS MEMBRAN ZEOLIT ZSM-5 SECARA *COATING* PADA SUHU 90°C BERDASARKAN VARIASI PERLAKUAN KASA *STAINLESS STEEL* AISI 316 180 MESH DALAM MENURUNKAN KADAR GAS CO

Maulida Julia Saputri[1],Ana Hidayati Mukaromah[2], Yusrin[3]

1. Program Studi DIV Analis Kesehatan Fakultas Ilmu Keperawatan dan Kesehatan Universitas Muhammadiyah Semarang
2. Laboratorium Kimia Fakultas Ilmu Keperawatan dan Kesehatan Universitas Muhammadiyah Semarang
3. Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Muhammadiyah Semarang

ABSTRAK

Telah dilakukan sintesis membran zeolit ZSM-5 secara coating pada suhu 90° C berdasarkan variasi perlakuan kasa *stainless-steel* AISI 316 180 mesh terhadap penurunan kadar gas CO. Jenis penelitian ini merupakan eksperimen yang didukung studi pustaka. Sebelumnya dilakukan perlakuan agar membran zeolit pada saat *coating* dapat tumbuh dengan baik. Kasa stainless steel AISI 316 ukuran 180 mesh diberikan perlakuan I dengan HNO_3 10% dan aceton, perlakuan II dengan Toluene 95% dan HCl 15%, perlakuan III dengan NaOH 15%;HCl 15% dan H_2SO_4 20%, serta perlakuan IV dengan toluene 95%; HCl 5% dan TPABr 0,1 M. Hasil penelitian menunjukkan persentase penurunan kadar gas CO berdasarkan variasi perlakuan I, II, III dan IV diperoleh rata-rata persentase penurunan kadar gas CO sebesar 12,45±1,76%; 9,38±1,41 %; 15,07±1,05% dan 11,74±1,12 %. Kapasitas adsorpsi membran zeolit ZSM-5 kasa AISI 316 180 mesh terhadap gas CO dengan perlakuan I, II, III dan IV diperoleh rata-rata yaitu 34781,93±1230,6 mg/g; 17252,03±1295,17 mg/g; 81047,46±3809,98 mg/g dan 30681,42 ±1589,472mg/g. Persentase penurunan kadar gas CO serta adsorpsi membran zeolit terbaik pada perlakuan III. Hasil dari uji statistik One Way Anova didapat nilai signifikansi 0,004 < 0,05 , disimpulkan bahwa Terdapat pengaruh variasi perlakuan *stainless steel* dengan sintesis membran zeolit ZSM-5 secara *coating* pada suhu 90°C terhadap penurunan kadar gas CO.

Kata kunci: Zeolit ZSM-5, Perlakuan terhadap kasa, Coating, Kadar gas CO

SYNTHESIS OF ZEOLIT ZSM-5 MEMBRANES BY COATING ON TEMPERATURE 90 ° C BASED ON VARIATION STAINLESS STEEL AISI 316 180 MESH TO REDUCE CO GAS CONCENTRATION

Maulida Julia Saputri[1],Ana Hidayati Mukaromah[2], Yusrin[3]

1. DIV Study Program Health Analyst Faculty of Nursing and Health University of Muhammadiyah Semarang
2. Chemistry Laboratory Faculty of Nursing and Health University of Muhammadiyah Semarang
3. Faculty of Mathematics and Natural Sciences University of Muhammadiyah Semarang

ABSTRACT

ZSM-5 zeolite membrane synthesis was carried out at 90 ° C based on a variety of AISI 316 180 mesh stainless-steel gauze treatment on the decrease in CO gas content. This type of research is an experiment supported by literature study. Previously, the treatment of zeolite membrane at the time of coating can grow well. AISI 316 stainless steel gauze of 180 mesh size is given treatment I with 10% HNO3 and aceton, II treatment with Toluene 95% and HCl 15%, Treatment III with 15% NaOH, 15% HCl and 20% H2SO4, and IV treatment with toluene 95 %; HCl 5% and TPABr 0.1 M. The results showed the percentage decrease in CO gas content based on the variation of treatment I, II, III and IV obtained the average percentage decrease in CO gas content of 12.45 ± 1.76%; 9.38 ± 1.41%; 15.07 ± 1.05% and 11.74 ± 1.12%. The adsorption capacity of ZSM-5 AISI 316 180 mesh zeolite membrane to CO gas with treatment I, II, III and IV was obtained on average, that is 34781,93 ± 1230,6 mg / g; 17252,03 ± 1295,17 mg / g; 81047,46 ± 3809,98 mg / g and 30681,42 ± 1589,472mg / g. Percentage reduction of CO gas content and best adsorption of zeolite membrane in treatment III. The results of One Way Anova statistical test obtained significance value 0.004 <0.05, it was concluded that there is influence of variation of stainless steel treatment with ZSM-5 zeolite membrane synthesis coating at temperature 90 ° C to decrease CO gas concentration.

Keywords: ZSM-5 Zeolite, Treatment of gauze , Coating, CO concentration