Pengaruh laju alir dietanolamina (DEA) terhadap absorpsi gas CO2 dari campurannya dengan CH4 melalui kontaktor membran superhidrofobik = Effect of diethanolamina (DEA) flow pattern on carbon dioxide absorption from its mixture with CH4 through superhydrophobic membrane contactor

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Abstrak

[ABSTRAK
Penelitian ini mengevaluasi kinerja absorpsi gas CO2 dari campurannya dengan CH4 melalui membran kontaktor superhidrofobik. Kinerja kontaktor membran superhidrofobik ini ditinjau dari empat parameter utama dengan variasi laju alir pelarut DEA (100, 300 dam 500 mL/menit) dan jumlah serat membran kontaktor (2000 dan 8000). Hasil penelitian ini menunjukkan bahwa kenaikan laju alir pelarut DEA meningkatkan kinerja kontaktor membran superhidrofobik, dalam hal koefisien perpindahan massa, fluks dan efisiensi penyerapan CO2. Sedangkan kenaikan jumlah serat membran akan menurunkan koefisien perpindahan massa dan fluks CO2. Namun, meningkatkan efisiensi penyerapan CO2 dan acid loading. Koefisien perpindahan massa dan fluks CO2 tertinggi yang didapatkan pada penelitian ini berturut-turut adalah 2,31 x 10-4 cm/s dan 7,15 x 10-6 mmol/cm2s pada laju alir DEA 500 mL/menit dan jumlah serat membran 2000. Sedangkan efisiensi penyerapan CO2 tertinggi adalah 72% pada laju alir DEA 500 mL/menit dan jumlah serat membran 8000.
ABSTRACT
This study evaluates performance of CO2 absorption from its mixture with CH4 through membran contactor superhydrophobic. Superhidrophobic membrane contactor performance is observed using four main parameters by varying the flow rate of solvent DEA (100, 300 dam 500 mL/min) and the number of fiber membrane contactors (2000 and 8000). The results showed that increasing DEA solvent flow rate increase superhidrophobic membrane contactor performance, in terms of mass transfer coefficient, flux and efficiency removal of CO2. While increasing the number of fiber membrane will reduce the mass transfer coefficient and CO2 flux. However, it will increase the efficiency removal of CO2 and acid loading. The highest mass transfer coefficient and CO2 flux obtained in this study are respectively 2,31 x 10-4 cm/s and 7,15 x 10-6 mmol/cm2s on DEA flow rate of 500 mL/min and the number of fiber membranes 2000. The highest CO2 absorption efficiency is 72% at DEA flow rate of 500 mL/min and the number of fiber membranes 8000.;This study evaluates performance of CO2 absorption from its mixture with CH4 through membran contactor superhydrophobic. Superhidrophobic membrane contactor performance is observed using four main parameters by varying the flow

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