# Effects of absorbent flow rate on co2 absorption through a super hydrophobic hollow fiber membrane contactor

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Abstrak

The aim of this study is to evaluate the effects of absorbent flow rate on CO2 absorption through a super hydrophobic hollow fiber contactor. The absorbent used in this study was a physical absorbent, namely a polyethyleneglycol-300 (PEG-300) solution. Meanwhile, the feed gases used in the experiments were pure CO2 and a mixture of 30% CO2 and 70% CH4. Gas absorption using a physical absorbent provides various benefits; for example, it can produce sufficiently high selectivity towards CO2 and it is less corrosive than chemical solvents. Three super hydrophobic hollow fiber contactors, each 6 cm in diameter and 25 cm in lengthconsist of 1000, 3000 and 5000 fibers, respectively, were used in this study. The type ofsuper hydrophobic fiber membrane used was polypropylene-based, with an outer and inner diameter of about 525 and 235 μm, respectively. During the experiments, the absorbent was flowed through the lumen fibers, whilst the feed gas flowed through the shell side of the membrane contactors. The experimental results showed that the mass transfer coefficient, the flux, and the absorption efficiency increased, but the CO2 loading decreased, with increasing absorbent flow rate in the membrane contactor. Meanwhile, it was found that an increase in the number of fibers in the membrane contactor, in general, will increase the absorption efficiency and the CO2 loading, but will decrease the overall mass transfer coefficient and the flux.