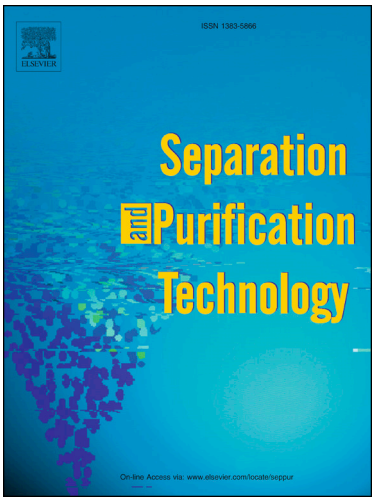

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Dynamics and mass transfer characteristics of CO_2 absorption into MEA/[Bmim][BF_4] aqueous solutions in a microchannel

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Abstract

The evolution of the size and velocity of CO_2 bubble absorbed into MEA/[Bmim][BF_4] aqueous solutions was in-line investigated by a high-speed camera. The coupling effect between the variation of volume and the velocity of bubbles was highlighted. According to the evolution of average mass transfer coefficient, the mass transfer performance in the whole flow process was studied. The results indicated that both the length and velocity of bubbles decreased gradually in the flow process due to mass transfer. A linear correlation between the relative velocity (the ratio of average bubble velocity to two-phase superficial velocity) and the relative lost length (the ratio of the lost length to the initial length) was proposed. The increase in overall liquid-phase volumetric mass transfer