عنوان مقاله:

Study on Mass Transfer Enhancement in a Gas-Liquid System Using Nanomaterials

محل انتشار:

مجله چالش های نانو و مقیاس خرد در علوم و فناوری, دوره 3, شماره 1 (سال: 1394)

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خلاصه مقاله:

The main objective of this paper is to examine the effect of nanomaterials on mass transfer coefficient in bubble type absorption of carbon dioxide by experiment. The absorption process is carried out in a bubble column and in room temperature. Mass transfer coefficient, saturated concentration of CO۲, and gas holdup are determined in this system. The kinds of nanomaterials, the concentrations of each one and the gas superficial velocity are considered as the key parameters. The results show that the mass fraction of nanomaterials has an optimum value to the mass transfer coefficient and saturated concentration of CO۲. ۰.۰۷% CNT nanofluid increases the mass transfer coefficient up to ۷۸%. The superficial velocity of CO۲ enhances mass transfer coefficient and gas holdup within the experimental range, whilst it has no effect on saturated concentration of CO۲. In addition, nanomaterials in solution increase the gas holdup.

کلمات کلیدی:

Gas Absorption, Gas Holdup, Mass Transfer Coefficient, Nanofluid, Nanostructure Materials