

# Study on the solid-liquid mass transfer performance of suspension in rotating packed bed

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## Abstract

This work presents the study on solid-liquid mass transfer performance of suspension in a rotating packed bed (RPB). The calculation model of solid-liquid mass transfer coefficient ( $k_s$ ) is deduced on the basis of the mass conversation law. The  $k_s$  in RPB is measured using the suspension of cation exchange resin particle reaction with NaOH. The effects of different operating parameters such as pre-dispersion time ( $t$ ), rotating speed ( $N$ ), mesh packing thickness ( $w$ ), liquid volume flow rate ( $LT$ ), and solid loading ( $e$ ) are investigated. The results show that the  $k_s$  increases with the increase of  $N$  and  $w$ , and increases first and then tends to remain constant with the increase of  $t$  and  $LT$ . However, the  $e$  has no influence on  $k_s$ . The obtained  $k_s$  ranges from  $1.00 \times 10^{-5}$  m/s to  $2.60 \times 10^{-4}$  m/s which is higher than that in microreactor (MR) under the similar experimental conditions.

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