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伴有Rayleigh对流的气液吸收过程数值模拟

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摘要 Flow and concentration fields of liquid phase in a gas-liquid contacting system are simulated to show the Rayleigh convection by utilizing the finite-element method. The Schlieren images in CO₂-ethanol system provided direct visual verification of the present simulation, and the simulated results were well consistent with the experimental observation. The influence of the Rayleigh convection on mass transfer is analyzed qualitatively and quantitatively based on the simulated and the experimental results.

关键词 [Rayleigh effect](#) [diffusion](#) [Schlieren device](#) [finite-element method](#)

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The Numerical Analysis of the Gas-Liquid Absorption Process Accompanied by Rayleigh Convection

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Abstract Flow and concentration fields of liquid phase in a gas-liquid contacting system are simulated to show the Rayleigh convection by utilizing the finite-element method. The Schlieren images in CO₂-ethanol system provided direct visual verification of the present simulation, and the simulated results were well consistent with the experimental observation. The influence of the Rayleigh convection on mass transfer is analyzed qualitatively and quantitatively based on the simulated and the experimental results.

Key words [Rayleigh effect](#); [diffusion](#); [Schlieren device](#); [finite-element method](#)

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