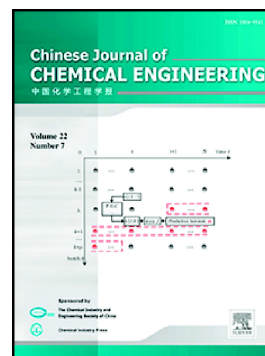


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Experimental study on gas–liquid dispersion and mass transfer in shear-thinning system with coaxial mixer

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Fluid Dynamics and Transport Phenomena

Experimental study on gas-liquid dispersion and mass transfer in shear-thinning system with coaxial mixer[☆]

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Abstract: The effects of impeller type, stirring power, gas flow rate, and liquid concentration on the gas-liquid mixing in a shear-thinning system with coaxial mixer were investigated by experiment, and the overall gas holdup, relative power demand, and volumetric mass transfer coefficient under different conditions were compared. The results show that, the increasing stirring power or gas flow rate is benefit to promote the overall gas holdup and volumetric mass transfer coefficient, while the increasing system viscosity weakens the mass transfer in a shearing-thinning system. Among the three turbines, the six curved-blade disc turbine (BDT-6) exhibits the best gas pumping capacity; the six 45° pitched-blade disc turbine (PBDT-6) has the highest volumetric mass transfer coefficient at the same unit volume power.

Keywords: non-Newtonian fluids; coaxial mixer; gas holdup; relative power demand; mass transfer

1. Introduction

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