Article Abstract

Title:	**Effects of superficial gas velocity and fluid property on the hydrodynamic performance of an airlift column with alcohol solution**
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Abstract:	In the present study, the influence of superficial gas velocity and fluid properties on gas holdup and liquid circulation velocity in a three-phase external loop airlift column using polystyrene (0.0036 m diameter and 1025.55 kg/m^3 density) and nylon-6 (0.0035 m diameter and 1084.24 kg/m^3 density) particles with aqueous solutions of alcohols (isoamyl alcohol and propanol) as liquids were investigated. The column was constructed using acrylic tube of inner diameter 0.084m and 2.6m in height. The gas holdup in the riser increased with increase in superficial gas velocity for air-alcohol-solid system. The presence of alcohol surfactants increased the gas holdup in the riser. It was also found that an increase in the superficial gas velocity increased the liquid circulation velocity for air-alcohol-solid system. Correlations were proposed for the prediction of gas holdup and liquid circulation velocity.
Keywords:	External loop airlift bioreactor, three-phase, effect of additives, hydrodynamics