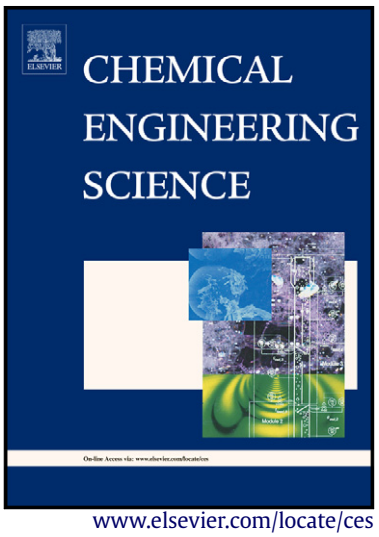

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On the single and two-bubble class models for bubble column reactors

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Abstract

A number of bubble column reactor models have been developed in literature on the basis of single-bubble class (SBC) or two-bubble class (TBC) concepts. While some researchers claimed that there was no significant difference between the two models, others believed that the TBC model was in better agreement with experimental data. A systematic and comparative analysis is carried out in this study to evaluate the model performance. We find that the dispute is relevant to the different sub-models used in these studies for hydrodynamics, mass transfer, and reaction kinetics as well as gas contraction. There are basically two aspects dominating the model calculation. The first is the hydrodynamic model for gas holdup, and the second is whether the system is limited by reaction or mass transfer. Then a new reactor model is