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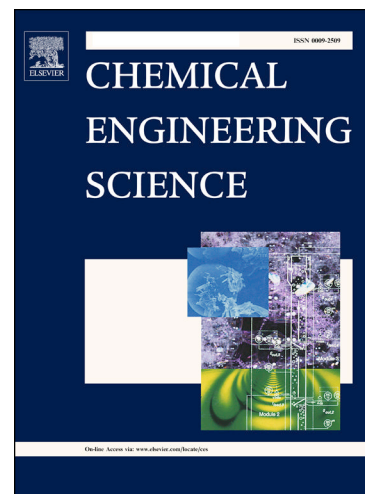
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# Assessment of the impact of bubble size modelling in CFD simulations of alternative bubble column configurations operating in the heterogeneous regime

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## Abstract

Modelling bubble columns operating in the churn turbulent flow regime is a considerable challenge due to their complex and transient behaviour. A key modelling decision is how best to model the bubble size distribution, with a range of approaches existing from the relatively simple option of using a single, representative bubble size to more complex population balance approaches. In this comparative study, we have examined various approaches (i.e. constant and variable single bubble size models, dual bubble size models, and both homogenous and inhomogeneous MUSIG models). Model predictions were compared with experimental data from three different configurations of a pilot-scale column (0.39 m in diameter and 2 m in height) operated at industrially relevant superficial gas velocities of 0.16 and 0.25 m/s. The

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