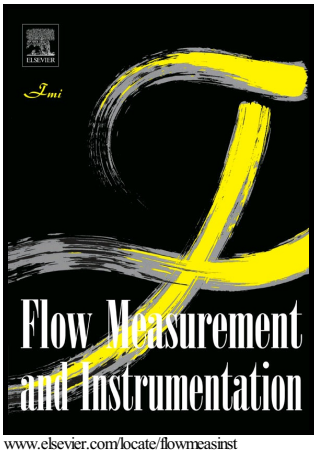

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ABSTRACT

Radioactive Particle Tracking (RPT) is a powerful advanced technique for studying the solid motion within industrial scale multiphase reactors. However, it is rather difficult to implement in actual industrial installations, mainly due to the required calibration stage under actual operating conditions. This work has the aim of comparing the motion of calcium alginate beads in a three-phase bubble column examined either with RPT or with an array of the same scintillation detectors used for RPT, but located vertically aligned beside the analyzed vessel. Liquid and solid used for the experiments were in batch mode and mixed by circulating air. The homogeneous and heterogeneous regimes have been explored. Results arising from both techniques, like axial tracer trajectories, axial profiles of tracer positions probabilities, solid axial mixing times and solid axial dispersion coefficients are compared, for highlighting the relevant information that can be extracted from the simplified method, validated by RPT. It is found that the simplified method fairly coincides with the classic