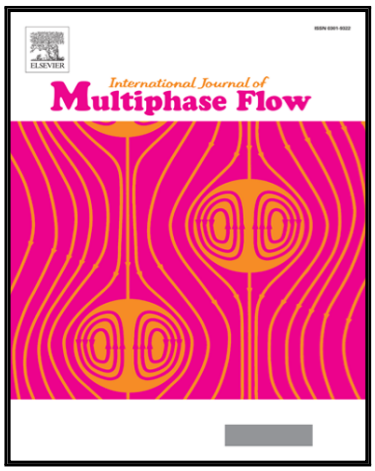

An Experimental Analysis of the Spraying Processes in Improved Design of Effervescent Atomizer

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Highlights

- New concept of the effervescent atomizer is tested at low operating pressures and consumption.
- The atomizer is capable to generate relatively stable spray comparing the standard effervescent construction of the nozzle. This is due to the specific breakup mechanism and mixing process inside the atomizer.
- A breakup mechanism based on the effervescent atomization is examined in detail using high speed imaging, phase Doppler anemometry and several post-processing techniques which enables to describe the whole spray.
- New features of the effervescent atomization were found and the main aspects of the breakup mechanism were determined using proper orthogonal decomposition and frequency analysis of the high-speed records.