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# Hydrodynamics of organic and ionic liquids in a slurry bubble column reactor operated at elevated temperatures

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## Highlights

- A specially designed gas sparger formed small bubbles and large interfacial areas
- Hydrodynamics of ionic liquids operated above 373 K has been investigated for the first time
- At elevated temperature, the behavior of ILs is dominated by their surface tension
- The influence of particle size, solid concentration, and particle density has been investigated
- An increase in particle density has been observed to reduce the gas holdup significantly

## Abstract

Hydrodynamics (e. g. gas holdup, bubble size, and flow regime) significantly influences the performance of slurry bubble reactors. In this work, the influence of gas, liquid, and solid phase properties on the hydrodynamics was investigated at temperatures up to 573 K and pressures up to 0.5 MPa. Amongst the investigated liquids, the hydrodynamic behavior of

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