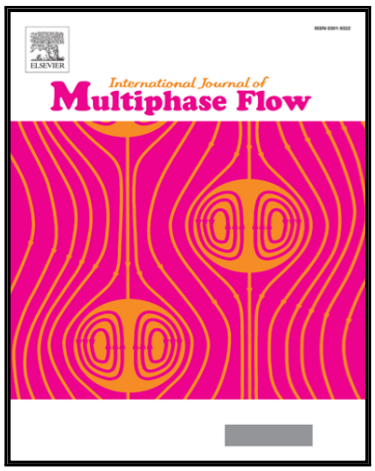

Droplet-based flows in serpentine microchannels: chemical reactions and secondary flows

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Highlights

- 3D simulation is conducted for transient reacting two-phase flow containing mass transfer and chemical reactions.
- The effects of chemical reaction on production and consumption of species are investigated.
- It is observed that the reaction begins from the front region of droplets.
- The production of species does not depend on droplet volume fraction but on the reaction factor.
- Secondary flows in droplets are analyzed and their effects are investigated on species distribution.