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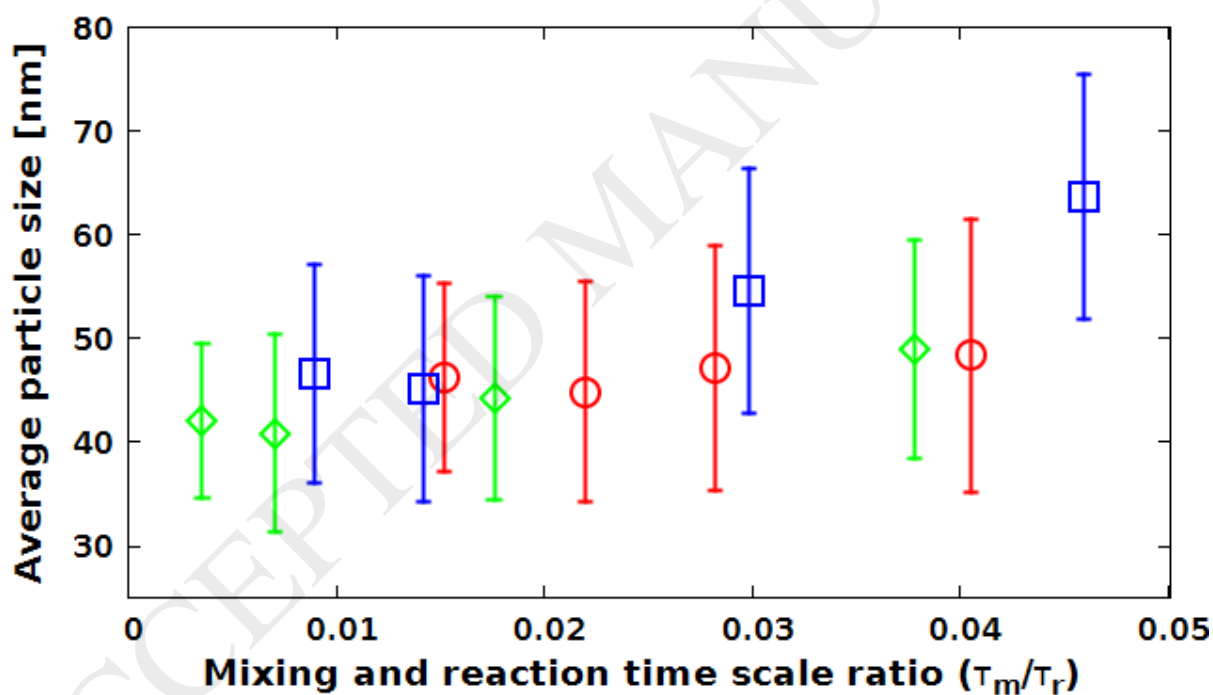
# A Coupled CFD-PBM and Thermodynamic Analysis of Continuous Supercritical Hydrothermal Synthesis of Nanoparticles

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## Graphical Abstract



## Highlights

- Coupled CFD-PBM is proposed for continuous hydrothermal synthesis of nanoparticles
- A thermodynamic model is utilized to predict the solubility of ceria
- The coupled model is tested with published experimental data
- The overall model predicts radial temperature profile and particle size of ceria in reactor
- Reaction and mixing controlled regimes in reactor are identified by time scale analysis

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