

## Accepted Manuscript

Title: Two Phase Mixture Model of Nano-Enhanced Mixed Convection Heat Transfer in Finned Enclosure

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### Highlights

- Two phase mixture model has been used to solve mixed convection of nanofluid.
- 3D simulation indicates that 2D analysis of mixed convection is valid only at low  $Ri$ .
- 2D simulation overestimates the enhancement of heat transfer by nanoparticles.
- Adding fins to lid-driven cavity can augment heat transfer only at high  $Ri$ .

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