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ACCEPTED MANUSCRIPT

Accurate non-asymptotic thermodynamic properties of near-critical N_2 and O_2 computed from molecular dynamics simulations

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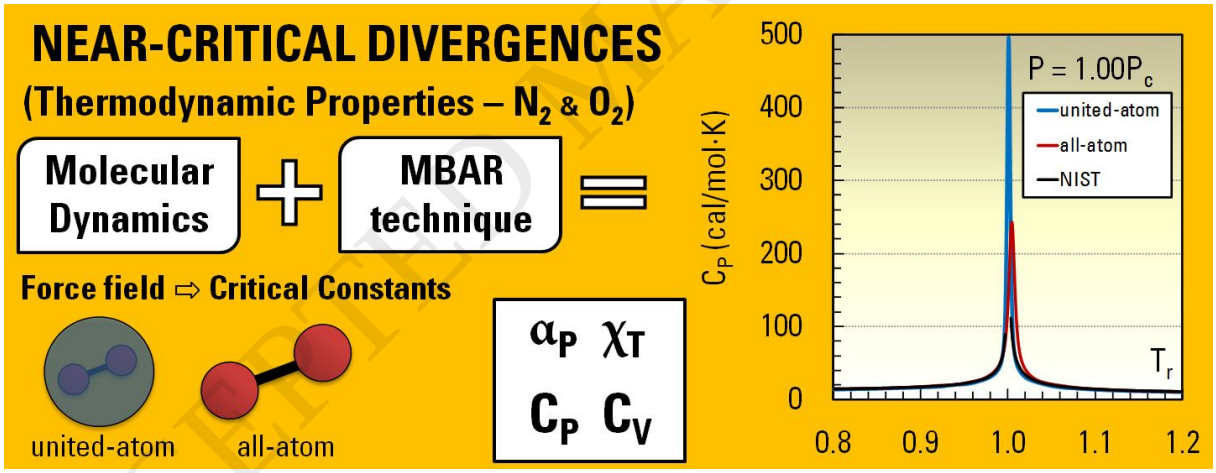
Graphical abstract



Highlights

- We computed four thermodynamic properties of near-critical N_2 and O_2 fluids.
- Molecular dynamics was combined with the MBAR technique.
- Two types of force field were used: a united-atom and a rigid all-atom.
- The critical divergences were described very well.
- Knowledge of reliable critical constants for each force field is crucial to the accuracy of the results.

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