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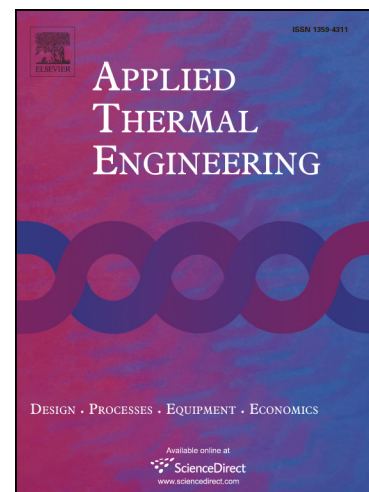
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Investigation into fluctuating anisotropy for biomass gasification in bubbling fluidized bed gasifier

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Abstract: Based on the Kinetic Theory of Granular Flow (KTGF), the second-order moment (SOM) model is developed for particles phases considering the anisotropy of fluctuating velocity in biomass gasification process. Coupled with chemical kinetics method, the chemical reactions of biomass gasification are described and the fluctuating anisotropy of particles is analyzed in bubbling fluidized bed (BFB). The simulated molar fractions of gas species are in good agreement with experimental data, and the comparisons with KTGF model and SOM model are simulated. The instantaneous fluidization process in BFB is analyzed, and the SOM and fluctuating anisotropy for biomass gasification is investigated. The mean value of second-order moment is higher while the fluctuating anisotropy is lower for the particles with larger diameter in computational domain.

Keywords: fluctuating anisotropy; second-order moment model; turbulence; biomass gasification; bubbling fluidized bed

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