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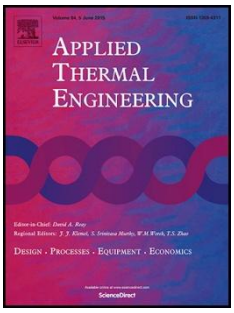

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Numerical modeling and investigation of two-phase reactive flow in a high-low pressure chambers system

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Highlights

- A novel two-dimensional two-phase flow model is established for the high-low pressure chambers system.
- A strong packing of particles is observed at the projectile base and will cause the pressure to rise faster.
- Different length-diameter ratios can affect the flow behavior through the vent-holes obviously.
- The muzzle velocity decreases with the length-diameter ratio of the high-pressure chamber.

Abstract： A high-low pressure chambers system is proposed to meet the demands of low launch acceleration for informative equipment in many special fields such as Aeronautics, Astronautics and Weaponry. A two-dimensional two-phase flow numerical model is established to describe the complex physical process based on a modified two-fluid theory, which takes into account gas production, interphase drag, intergranular stress, and heat transfer between two phases. In order to reduce the computational cost, the parameters in the high-pressure chamber at the instant the

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