

## INTISARI

Perubahan lapisan *film* tipis menjadi *droplet* tunggal yang bersifat *incompressible*, *viscous*, dan *transient* disimulasikan menggunakan model *pseudopotential Lattice Boltzmann D2Q9* dengan pendekatan Bhatnagar, Gross, dan Krook (BGK). Diskretisasi dilakukan dengan metode *velocity space* dan *time space*. Interaksi antara temperatur, tekanan, dan densitas pada *droplet* diformulasikan menggunakan persamaan keadaan Carnahan-Starling. Model disimulasikan dalam bahasa pemrograman FORTRAN dan divisualisasikan dalam bahasa MATLAB. Komparasi dilakukan dengan membandingkan hasil simulasi saat ini dengan *paper* terpublikasi pada jurnal internasional bereputasi dengan parameter-parameter : sudut kontak, beda tekanan, dan *spurious current*.

**Kata Kunci** : Carnahan-Starling, *droplet*, lapisan *film*, *Lattice Boltzmann*, *pseudopotential*.

## ABSTRACT

In the present work, the change of thin film layer into a single droplet in the form of incompressible, viscous, and transient was simulated using the pseudopotential Lattice Boltzmann D2Q9 model with the approximation from Bhatnagar, Gross and Krook. Discretization was done using velocity space and time space methods. The interaction between temperature, pressure, and density on the droplet was formulated using the Carnahan-Starling equation of state. The model was simulated in the FORTRAN programming language and then visualized in the MATLAB language. The comparison was carried-out by comparing the results of the current simulation with data from the open literature. The examined parameters were: contact angle, pressure difference, and spurious current.

**Keywords** : Carnahan-Starling, droplet, film layer, Lattice Boltzmann, pseudopotential.