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Numerical Investigation of Pressure and Velocity Field Contours of Dynamics of Drop Formation

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Abstract : This article represents the numerical investigation of the pressure and velocity field variation of the dynamics of pendant drop formation through a capillary tube. Numerical simulations are executed using volume of fluid (VOF) method in the computational fluid dynamics (CFD). In this problem, Non Newtonian fluid is considered as dispersed fluid whereas air is considered as a continuous fluid. Pressure contours at various time steps expose that pressure varies nearly hydrostatically at each step of the dynamics of drop formation. A result also shows the pressure variation of the liquid droplet during free fall in the computational domain. The evacuation of the fluid from the necking region is also shown by the contour of the velocity field. The role of surface tension in the Pressure contour of the dynamics of drop formation is also studied.

Keywords : pressure contour, surface tension, volume of fluid, velocity field
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