Abstract Submitted for the SES11 Meeting of The American Physical Society

Drop Formation from a Wettable Nozzle BRIAN CHANG, GARY NAVE, SUNGHWAN JUNG, Department of Engineering Science and Mechanics at Virginia Tech — Drop formation from a nozzle is a common occurrence in our daily lives. It is essential in ink-jet printers and spray cooling technology. However, most research has already been done on the pinch-off mechanism from a non-wettable nozzle. In this study, we focus on the formation of a drop from a wettable nozzle. Initially, a drop will climb the outer walls of the wettable nozzle because of surface tension. This initial upward motion is closely related to the capillary rise phenomenon. Then, when the weight of the drop becomes large enough, the force of gravity would overcome surface tension causing the drop to fall. By changing the nozzle size and fluid flow rate, we have observed different behaviors of the droplets and developed a mathematical model that predicts the motion of the drop. Two asymptotic solutions in the initial and later stages of drop formation are then obtained and show good agreement with the experimental observations

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Date submitted: 22 Aug 2011

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