

Abstract Submitted  
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**Navier-Stokes computations for water drops falling in air: intermediate Reynolds numbers**<sup>1</sup> ARNE PEARLSTEIN, MIN-PO SHIUE<sup>2</sup>, University of Illinois at Urbana-Champaign, Urbana, IL 61801, JAMES FENG, Boston Scientific, Plymouth, MN 55442 — We report Navier-Stokes computations, using a finite-element technique, of the steady descent of a deformable water drop through air. Variations in drop shape, internal circulation, and drag coefficient with Reynolds number are discussed in terms of simple physical mechanisms. Discrepancies between the computational results and the experimental data of Beard and Pruppacher, obtained in an open-return vertical wind tunnel, are interpreted in terms of scavenging from the polluted atmosphere of surfactants, as measured by Kawamura et al. in collected rainwater samples several hundred meters southeast of the wind-tunnel intake.

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