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The Effect of Shape Mode Oscillations on the Particle Scavenging Efficiency of Water Droplets Using Acoustic Levitation¹ J. KIZZEE, J.R. SAYLOR, Clemson University, Dept. Mechanical Engineering — The effect of drop oscillations on the scavenging of solid particles is studied using an ultrasonic transducer to levitate a water droplet in an airflow of particles. Shape mode oscillations are induced in the drop by modulating the acoustic field used for levitation. The effect of oscillation frequency, the oscillation amplitude, and the drop diameter on the scavenging of particles is presented. The particle diameters are on the order of 1μ m and the drop diameters are on the order of 1mm. Although single droplets are studied here, the application of interest is improved scavenging of particles by spray drops. Specifically, improving the elimination of coal dust particles from mines using waters sprays excited ultrasonically is of interest.

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