

Abstract Submitted  
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**The effect of drop shape oscillations on particle scavenging by drops** J.R. SAYLOR, R.E. MCDONNELL, Clemson University — The scavenging of particles by a falling water drop is complicated by the two-way coupling between the flow in the wake behind the drop, and the shape oscillations experienced by the drop. Anomalous particle scavenging results are often attributed to drop shape oscillations, the existence of vortices in the drop wake, or a combination of the two. However, conclusive studies showing how these phenomena affect particle scavenging do not exist. As a first step toward addressing this need, experiments were conducted to determine the effect of drop oscillations on the scavenging coefficient. Experiments were conducted using pure water drops, and drops consisting of a water/glycerol mixture having a reduced oscillation amplitude compared to the pure water case. Scavenging coefficients are presented for these two cases over a range of particle diameters and drop diameters. The application of this work is to the removal of particulate matter by rain, and the efficacy of drop scrubbers used in pollution control.

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