

Abstract Submitted
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**Measurements of the Diameter and Velocity Distributions of
Atomized Tablet-Coating Solutions for Pharmaceutical Applications¹**

KATHRYN OSTERDAY, UC San Diego, ALBERTO ALISEDA, U of Washington, JUAN LASHERAS, UC San Diego — The atomization of colloidal suspensions is of particular interest to the manufacturing of tablets and pills used as drug delivery systems by the pharmaceutical industry. At various stages in the manufacturing process, the tablets are coated with a spray of droplets produced by co-axial atomizers. The mechanisms of droplet size and spray formation in these types of atomizers are dominated by Kelvin-Helmholtz and Raleigh-Taylor instabilities for both low[1] and high[2] Ohnesorge numbers. We present detailed phase Doppler measurements of the Sauter Mean Diameter of the droplets produced by co-axial spray atomizers using water-based colloidal suspensions with solid concentrations ranging from fifteen to twenty percent and acetone-based colloidal suspensions with solid concentrations ranging from five to ten percent. Our results compare favorably with predictions by Aliseda's model. This suggests that the final size distribution is mainly determined by the instabilities caused by the sudden acceleration of the liquid interface. [1]Varga, C. M., et al. (2003) J. Fluid Mech. 497:405-434 [2]Aliseda, A. et al. (2008). J. Int. J. Multiphase Flow, 34(2), 161-175.

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