

Abstract Submitted
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A Lightweight Particle Deposition System for Particle Resuspension Studies JASON DEGRAW, JOHN CIMBALA, Penn State University — Experimental studies of particle resuspension often require that particles be deposited in a localized area in a repeatable manner. A system has been designed for this purpose that is lightweight in both mass and complexity – attributes which are both highly desirable. The low mass of the system allows for accurate determination of the mass of particulate matter placed inside the system (via tare weighing), and the low complexity of the system makes it easy to use. The device is a piston-cylinder apparatus made of plastic, and is therefore inexpensive to build, easy to clean, and readily disposable. Rapid upward movement of the piston draws air into the cylinder through small ports placed around the perimeter of the cylinder. The injected air aerosolizes particulate matter placed in the ports, and then the particles are allowed to settle onto the substrate. The device enables the localized deposition of particles without much lost material, allowing for more frugal and careful use of allergen-containing particulate matter (some of which require a great deal of time and effort to produce). Our previous system would deposit about 15-20% of the particles in the desired location (typically a small region of a flooring sample), while the new system is able to deposit more than 25-30% of the particles in the desired location with considerably less waste.

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