

Abstract Submitted
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An ultrasonic scrubber: enhanced removal of particles by water sprays via ultrasonic excitation J.R. SAYLOR, WEIYU RAN, Clemson University, R. GLYNN HOLT, Boston University — Sprays are commonly used to remove pollutant particles in smokestacks, to reduce coal dust levels in mines, and in dust abatement applications. For typical conditions, sprays work poorly on particles having a diameter on the order of a micron, which is also the particle size most deleterious to the human lung. The acoustic radiation force can be used to move particles and drops, and we hypothesized that by forcing a particle laden flow and a spray into an ultrasonic standing wave field, particles and drops would be concentrated, thereby increasing the effectiveness of particle removal by sprays. Experimental data is presented in the form of scavenging coefficients for micron scale particles that supports this hypothesis. Also discussed is whether increased scavenging by ultrasonics is due to particle/drop interactions particle/particle interactions, or both.

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