

Abstract Submitted
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Aerosol and splatter in a dental procedure; an experimental approach using PIV/PTV¹ EILEEN HAFFNER, MARYAM BAGHERI, University of Illinois at Chicago, JONATHAN HIGHAM, University of Liverpool, PARISA MIRBOD, University of Illinois at Chicago — With the novel coronavirus, SARS-CoV-2, outbreak there has been a directive to improve medical working conditions. In the dentistry field, airborne particles are produced through aerosolization during oral procedures, which utilize high-speed dental instruments. These droplets and particles could spread diseases such as influenza, Legionnaire's disease, or severe acute respiratory syndrome (SARS). This study explores the reflected spray from an ultrasonic scalar. Particle image velocimetry (PIV) and particle tracking velocimetry (PTV) were used to study the velocity and trajectories of splatter produced during the scalar process. It was observed that the maximum droplets velocity occurs directly below the tip of the scalar. Shadowgraphy was then used to measure the size and the velocity of individual droplets of the splatter produced by the high-speed scalar process after the device starts up. The droplets diameters were found to vary between $5\mu\text{m}$ to $600\mu\text{m}$. Understanding the velocity and particle size distribution of droplets will help develop safety precautions to protect dentistry professionals from possible Coronavirus exposure.

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