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Sparkling Droplets: Aerosol Dispersion Resulting from Drop Impingement on Porous Surfaces YOUNG SOO JOUNG, CULLEN BUIE, Massachusetts Institute of Technology — We have investigated aerosol generation from droplets hitting wettable porous surfaces. Aerosols have been widely investigated due to their significant impact on the environment. To date, bubbles breaking at air/water interfaces have been considered the chief mechanism of aerosol dispersion. Here, we demonstrate that droplets can release aerosols when they impact porous surfaces. At the moment of impact, tiny bubbles are formed inside the droplet, fed by air escaping the porous media. The tiny bubbles break when they meet the droplet/air interface, releasing tiny water-jets, the sizes of which are in the range of tens-of-micrometers. Interestingly, within a specific range of impact velocity and surface properties, we observed frenzied ejection of tiny water-jets producing aerosol clouds above the surface. With knowledge of the surface properties and the impact conditions we can predict when the frenzied aerosol generation will occur. This study will produce novel experimental methodologies for further investigation of the environmental impact of aerosols.

Young Soo Joung
Massachusetts Institute of Technology

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