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Supplementary Materials for

Molecular beam brightening by shock-wave suppression

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Supplementary material

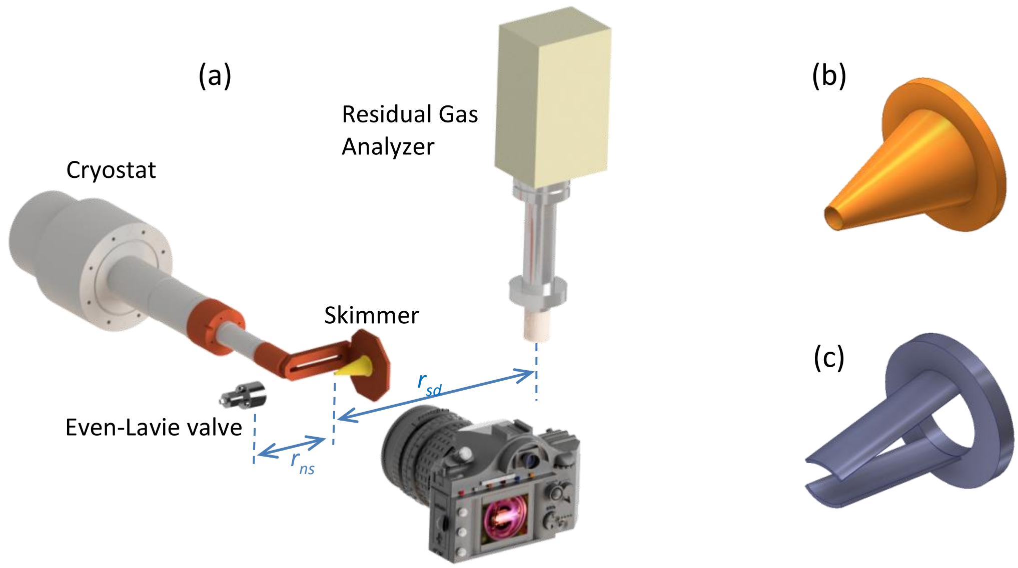

fig. S1. Experimental setup for measuring the effect of skimmer temperature on the transmitted beam. The layout (**a**) includes a pulsed valve, a cryo-cooled skimmer at a variable distance r_{ns} downstream of the nozzle, and a residual gas analyzer for measuring beam density at a fixed distance r_{sd}=215*mm* downstream of the skimmer tip; vacuum chambers are omitted from the illustration for clarity. In the imaging experiments, a high-voltage cylindrical grid, 25*mm* in length, 15*mm* in diameter and separated at the base by 5*mm* from the nozzle, induces a short discharge pulse. A camera records the resulting plasma glow, revealing the shock waves in the density field. A conical copper skimmer (**b**) is used for density measurement experiments, while a split aluminum skimmer (**c**) is used for visualization of the internal shock structure.

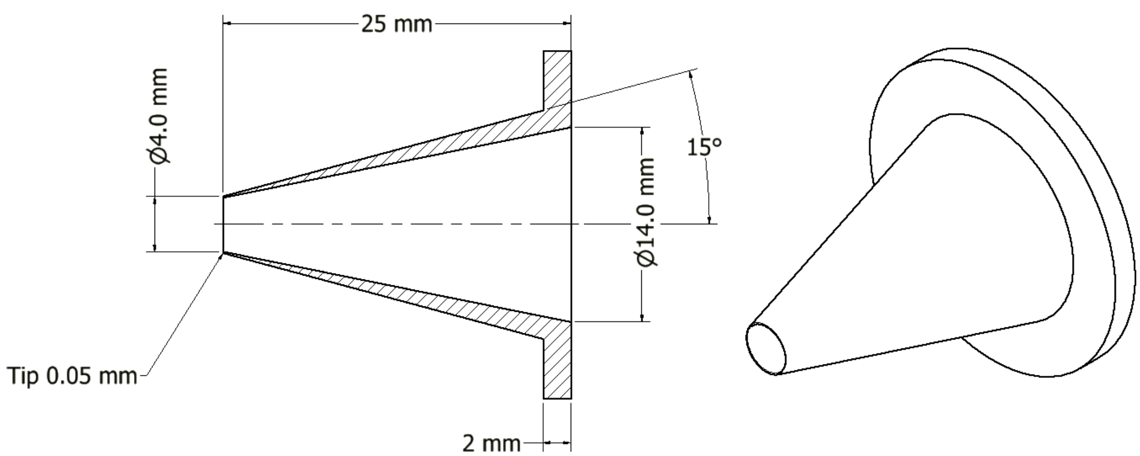

fig. S2. Schematics of the conical skimmer used in the quantitative experiments. The skimmer is tapered, with a thick wall near the base for improved heat conduction, and a sharp tip.