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Microfluidics Gas Dynamic Virtual Nozzle[1] GARRETT NELSON, Arizona State University Dept of Physics, FERNADA CAMACHO-ALANIS, Arizona State University Dept of Chemistry and Biochemistry, JOHN SPENCE, UWE WEIERSTALL, Arizona State University Dept of Physics, ALEXANDRA ROS, Arizona State University Dept of Chemistry and Biochemistry, BRUCE DOAK, Arizona State University Dept of Physics — The Gas Dynamic Virtual Nozzle (GDVN) is a microscopic liquid droplet injector that utilizes a gas focusing sheath to run a continuous supply of hydrated bioparticles in vacuum across a pulsed X-ray beam. Its ability to run for days without clogging make it an ideal injector for next-generation biological imaging techniques such as serial femtosecond crystallography (SFX). We report a new approach to nozzle fabrication that has significantly extended the injector's capabilities. Soft photolithography was used to produce a microfluidics version that is comparable to the standard GDVN but capable of subsonic operation and fast fluid switching – desirable features for increasing data yield by reducing wasted sample.

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