

Laser-induced microjet formation and application

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Recently, we discovered that very thin liquid jets at supersonic velocities can be produced by laser-induced bubble formation in a hydrophobically coated capillary. In the liquid contained by the capillary, a vapor bubble is created to generate a pressure wave towards the liquid/air meniscus. The meniscus will deform, resulting in a very thin, high-velocity jet, which is able to penetrate soft materials such as human skin. We think that with this method it is possible to improve the existing needle-free injection systems for medicine delivery, especially as the doses can be very precisely controlled and the jet is much thinner than existing equipment.