

Liquid jet targets as a water-window radiation source

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One problem of laser-plasma X-ray sources from a solid target is the debris which can coat and scratch delicate x-ray optics, degrading their performance. To avoid this problem, tape targets, gas targets, liquid targets, gas-shielding, and so on have been suggested, tested and developed to a degree in the past years. We have endeavored to develop a monochromatic radiation source using ethanol and liquid nitrogen which can be used to an X-ray microscope equipped with zone plates for the best imaging.

In this presentation, the liquid jet system for ethanol and liquid nitrogen will be described. Nanosecond, picosecond, femtosecond lasers have been used to produce plasmas from the liquid jets. Radiation characteristics from these plasmas will be also discussed. Optimized conditions from these plasmas will also be discussed in terms of conversion efficiency.

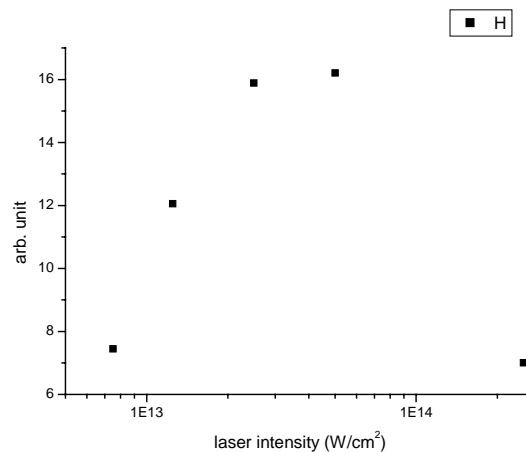


Fig 1 Conversion efficiency for 2.87 nm from liquid nitrogen plasma using a 120ps pulsed laser