

Development of sub-microsecond delay pump-probe imaging method for hydrodynamic micro liquid deformation

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Hydrodynamic micron-deformation is one of the heart studies from extreme ultraviolet to X-ray generation. Generally, liquids are deformed by a jetting nozzle sharpness and, electric- and magnetic-force, however these forces are relatively small and static. Recently, Laser ablation method is successfully employed for extreme ultraviolet generation of semiconductor lithography machines. However, the dynamics of liquid deformation in the micro-spatial space occurs the time regime from several ten nanosecond to several hundred nanosecond, and traditional pump probe method is equipped with the delay line, which is typical range from femtosecond to picosecond. In this research, we report that the pump-probe method, which has a fiber delay with a cable length of 100-meter, is developed and imaged the micro liquid deformation with a femtosecond resolution and a several hundred delay time.

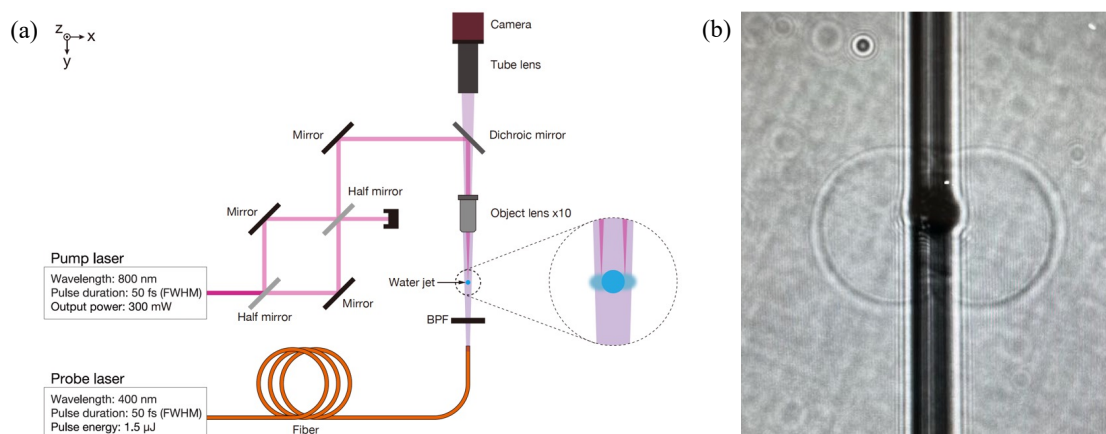


Figure 1: (a) Schematic drawing of fiber delayed pump probe setup and (b) its obtained image.

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References: