

FAST PHOTOGRAPHY IN THE SERVICE OF SPATIALLY AND TEMPORALLY RESOLVED LIBS DIAGNOSTICS OF DOPED TUNGSTEN

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Abstract. The spectroscopic diagnostic of laser induced plasma is challenged by its spatial inhomogeneity and dynamic evolution, which simultaneously alters plasma parameters and emission of ablated material in plasma plume (Lazic et al. 2006, A. Singh et al. 2010). Those difficulties become more pronounced when conducting spatially and temporally resolved measurements. Choosing appropriate conditions for LIBS, such as delay time, gate width, and observed plasma section is paramount. At atmospheric pressure, plasma tends to stay more localized in the vicinity of the target, with specific flattened shape. In contrast, plasma expanding into low pressure exhibits rapid and pronounced dispersion, potentially causing plasma to move out of the field of view, and/or not being captured completely. This can make determining the time of the maximum plasma emission intensity challenging. In this study influence of different additives in tungsten samples on plasma plume dynamics and expansion is investigated and possible impact on the spectroscopic diagnostics is assessed.

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